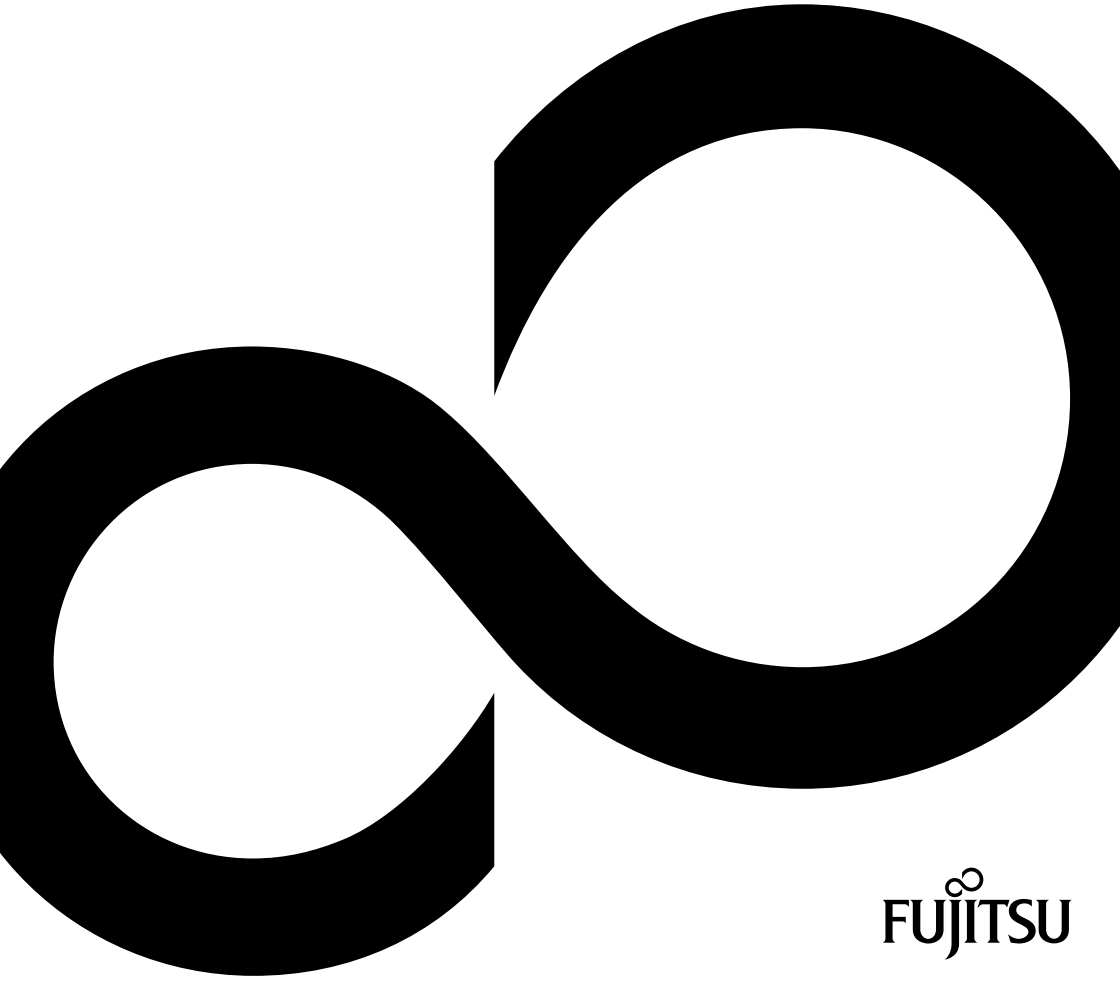
FUJITSU LIFEBOOK E544
FUJITSU LIFEBOOK E554



FUJITSU

Contact address in North America

FUJITSU AMERICA INC.

1250 East Arques Avenue, Sunnyvale,

CA 94085-3470, U.S.A.

Telephone: 800 831 3183 or 408 746 6000

"http://solutions.us.fujitsu.com"

"http://solutions.us.fujitsu.com/contact"

Have a question? Email us at: "AskFujitsu@us.fujitsu.com"

Copyright

© 2014 Fujitsu America, Inc. All rights reserved

B5FK-4391-01ENZ0-00

FUJITSU LIFEBOOK E544
FUJITSU LIFEBOOK E554

Operating Manual

Fujitsu Contact Information	**7**
Notational conventions	**8**
Ports and operation controls	**9**
Important notes	**13**
First-time setup of your device	**17**
Working with the notebook	**20**
Security functions	**48**
Connecting external devices	**54**
Removing and installing components during servicing	**61**
Settings in BIOS Setup Utility	**69**
Troubleshooting and tips	**71**
Technical data	**78**
Manufacturer's notes	**81**
Appendix	**87**
Index	**103**

Copyright and Trademark Information

Fujitsu America, Incorporated has made every effort to ensure the accuracy and completeness of this document; however, as ongoing development efforts are continually improving the capabilities of our products, we cannot guarantee the accuracy of the contents of this document. We disclaim liability for errors, omissions, or future changes.

Fujitsu, the Fujitsu logo and LIFEBOOK are registered trademarks of Fujitsu Limited or its subsidiaries in the United States and other countries.

Intel and Intel Core are trademarks or registered trademarks of Intel Corporation or its subsidiaries in the United States and other countries.

Microsoft and Windows are either registered trademarks or trademarks of Microsoft Corporation in the United States and/or other countries.

The ExpressCard word mark and logo are owned by the Personal Computer Memory Card International Association (PCMCIA) and any use of such marks by Fujitsu America, Incorporated is under license.

Google is a trademark or registered trademark of Google Incorporated.

Bluetooth is a trademark of Bluetooth SIG, Inc., USA.

OmniPass is a trademark of Softex, Inc.

Roxio is a trademark of Roxio, a division of Sonic Solutions.

PowerDirector, PowerDVD, YouCam, and MakeDisc are trademarks of CyberLink Corp.

Adobe, Acrobat, and Adobe Reader are either a registered trademarks or trademarks of Adobe Systems Incorporated in the United States and/or other countries.

Made under license from DTS Licensing Limited. DTS and the symbol are registered trademarks and & DTS Boost is a trademark of DTS, Inc. Product contains software. © DTS, Inc. All rights reserved.

The DVD player found in some models of the LIFEBOOK notebook incorporates copyright protection technology that is protected by method claims of certain U.S. patents and other intellectual property rights owned by Macrovision Corporation and other rights users. Use of this copyright protection technology must be authorized by Macrovision Corporation, and is intended for home and other limited viewing uses only unless authorized by Macrovision Corporation. Reverse engineering or disassembly is prohibited.

All other trademarks specified here are the property of their respective owners.

Contents

Fujitsu Contact Information **7**

Notational conventions **8**

Ports and operation controls **9**

Important notes **13**
Safety instructions 13
Additional safety notes for devices with wireless components 14
Energy saving 14
Energy saving under Windows 14
Traveling with your notebook 14
Before you travel 15
Transporting the notebook 16
Cleaning the notebook 16

First-time setup of your device **17**
Unpacking and checking the device 17
Choose a location 18
Connecting the AC adapter 18
Switching on the device for the first time 19
Installing Bonus Apps 19

Working with the notebook **20**
Status indicators 20
Switching the notebook on 22
Switching the notebook off 22
Keyboard 23
Virtual number keys 25
Separate number keypad 26
Key combinations 26
Country and keyboard settings 28
Application keys (ECO and Wireless) 28
Touchpad and touchpad buttons 29
Moving the pointer 29
Selecting an item 29
Executing commands 29
Dragging items 30
LCD screen 30
Webcam 31
Rechargeable battery 32
Charging, caring for and maintaining the battery 32
Removing and installing the battery 32
Modular bay devices 35
Removing a modular bay device 35
Installing a modular bay device 36
Optical drive 36
Handling optical disks 36
CD/DVD indicator 37
Inserting or removing an optical disk 37
Manual removal (emergency removal) 38
Removing and replacing the removable dust filter 38

Using the energy saving functions ... 40
Memory cards ... 41
Supported formats ... 41
Inserting the memory card ... 41
Removing the memory card ... 41
Speaker and microphones ... 42
Wireless LAN/Bluetooth components ... 42
Switching the wireless components on and off ... 42
Further information on WLAN and Bluetooth ... 42
Ethernet and LAN ... 43
Your port replicator ... 44
Ports on the port replicator ... 44
Connecting the notebook to the port replicator ... 45
Connecting the AC adapter to the port replicator ... 46
Switching on the notebook via the port replicator ... 46
Disconnecting the notebook from the port replicator ... 47

Security functions ... 48
Configuring the fingerprint sensor ... 48
Using the Security Lock ... 49
Configuring password protection in BIOS Setup Utility ... 49
Protecting BIOS Setup Utility (supervisor password and user password) ... 50
Password protection for booting the operating system ... 51
Password protection for the hard disk ... 51
Trusted Platform Module - TPM (device dependent) ... 52
Enabling TPM ... 52
Disabling TPM ... 52
Smart Card reader ... 53
Inserting the Smart Card ... 53

Connecting external devices ... 54
Connecting an external monitor ... 55
Connecting external devices to the serial port (optional) ... 56
Port settings ... 56
Device drivers ... 56
Connecting USB devices ... 57
USB port with charging function (Anytime USB charge) ... 58
Connecting an external SATA hard drive (eSATA) (port replicator only) ... 59
Safe removal of eSATA and USB devices ... 59
Connecting external audio devices ... 60
Microphone port/Line In ... 60
Headphones port ... 60

Removing and installing components during servicing ... 61
Notes on installing and removing boards and components ... 61
Preparing to remove components ... 62
Removing and installing memory expansion ... 62
Removing the cover ... 63
Removing a memory module ... 63
Installing a memory module ... 64
Attaching the cover ... 64
Removing and installing the hard disk ... 65
Removing the cover ... 65
Removing the hard disk ... 66

Installing a hard disk ... 67
Attaching the cover ... 68
Finishing component removal ... 68

Settings in BIOS Setup Utility ... 69
Starting the BIOS Setup Utility ... 69
BIOS Setup Utility operation ... 69
Exiting BIOS Setup Utility ... 70
Exit Saving Changes - save changes and exit BIOS Setup Utility ... 70
Exit Discarding Changes - Reject changes and exit BIOS Setup Utility ... 70
Load Setup Defaults – load default values ... 70
Discard Changes - Discard Changes without exiting BIOS Setup Utility ... 70
Save Changes - save changes without exiting the BIOS Setup Utility ... 70
Save changes and power off ... 70

Troubleshooting and tips ... 71
Help if problems occur ... 71
Recovering your Factory Image ... 71
The notebook's date or time is incorrect ... 72
When certain characters are entered on the keyboard, only numerals are written ... 72
The notebook's LCD screen remains blank ... 72
The LCD screen of the notebook is difficult to read ... 72
The external monitor remains blank ... 73
The external monitor is blank or the image is unstable ... 73
The notebook does not start after switching it on ... 74
The notebook stops working ... 74
The printer does not print ... 74
The wireless connection to a network does not work ... 75
Acoustic warning ... 75
Smart Card reader is not recognized ... 75
Smart Card PIN forgotten ... 75
Smart Card lost ... 75
Error messages on the screen ... 76

Technical data ... 78
LIFEBOOK ... 78
WLAN specifications ... 79
Rechargeable battery ... 80
AC adapter ... 80

Manufacturer's notes ... 81
Disposal and recycling ... 81
Recycling your battery ... 81
DOC (Industry CANADA) Notices ... 81
UL Notice ... 82
ENERGY STAR Compliance ... 83
Declarations of conformity ... 83
FCC and IC Regulatory Information ... 83
Regulatory Notes and Statements ... 84

Appendix ... 87
Before Using the Optional Wireless LAN ... 87
Wireless LAN Devices Covered by this Document ... 87
Characteristics of the WLAN Device ... 87

Wireless LAN Modes Using this Device ... 87
Deactivating/Disconnecting the WLAN Device ... 90
Configuring the Wireless LAN ... 90
Configuring the WLAN Using Windows ... 90
Connection to the network ... 90
Troubleshooting the WLAN ... 91
Using the Bluetooth Device ... 93
Image Backup and Recovery Procedures ... 93
Creating a Backup of Bootable Disk and Recovery Image ... 94
RECOVER YOUR SYSTEM WHEN THE HARD DRIVE IS STILL ACCESSIBLE ... 95
Using the Recovery and Utility Tools ... 95
Restore the Recovery Image from Hidden Partition ... 97
RECOVER YOUR SYSTEM WHEN THE HARD DRIVE IS NOT BOOTABLE ... 98
Restore the Recovery Image for Full Hard Drive ... 98
Recovering Your Recovery Image Using Recovery and Utility (for new hard drive or non-bootable hard drive) ... 99
Installing the Software after the Recovery Image is Restored ... 100

Index ... 103

Fujitsu Contact Information

Service and Support

You can contact Fujitsu Service and Support in the following ways:

- Toll free number: 1-800-8Fujitsu (1-800-838-5487)
- Website: "http://solutions.us.fujitsu.com/www/content/support/contact/index.php"

Before you place the call, have the following information ready so that the customer support representative can provide you with the fastest possible solution:

- Product name
- Product configuration number
- Product serial number
- Purchase date
- Conditions under which the problem occurred
- Any error messages that have occurred
- Type of device connected, if any

Fujitsu Shopping Online

Please go to "http://www.shopfujitsu.com/store/ ".

Maintaining Latest Configuration

To ensure that you always have the most current driver updates related to your system, occasionally access the Fujitsu Software Download Manager (FSDM) utility. The FSDM utility is available from the Fujitsu Support site. FSDM will allow you to view a list of the most current drivers, utilities and applications to determine whether you have the latest versions. If you have a Windows 7 or or Windows 8/8.1 operating system, you will need to go to the Support Site to download the FSDM Utility: "http://support.fujitsupc.com/CS/Portal/support.do?srch=DOWNLOADS".

Limited Warranty

Your LIFEBOOK notebook is backed by a Fujitsu International Limited Warranty. Check the service kit that came with your notebook for the Limited Warranty period and terms and conditions.

Notational conventions

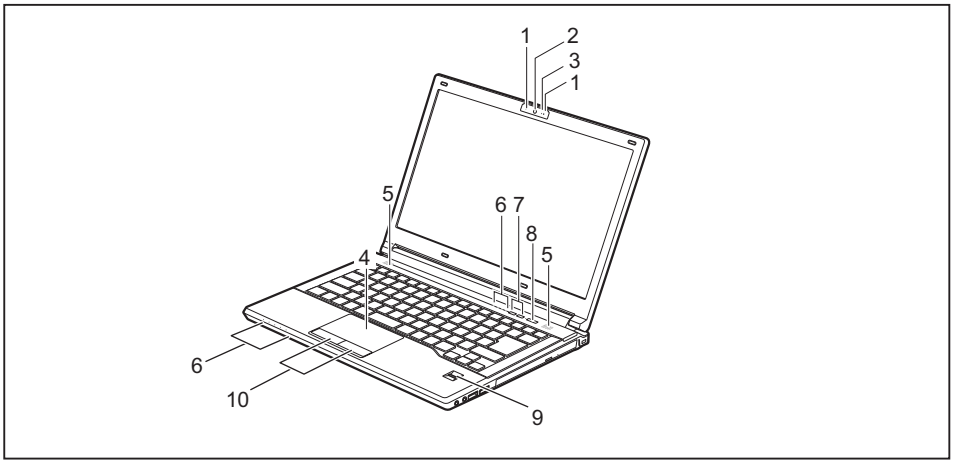
	Pay particular attention to text marked with this symbol. Failure to observe this warning will endanger your life, will damage the device or lead to loss of data. The warranty will be invalidated if the device becomes defective through failure to observe these warnings.
	Indicates important information which is required to use the device properly.
►	indicates an activity that must be performed
↳	indicates a result
`This style`	indicates data entered using the keyboard in a program dialogue or at the command line, e.g. your password (**`Name123`**) or a command used to start a program (**`start.exe`**)
`This style`	indicates information that is displayed on the screen by a program, e.g.: `Installation is complete.`
This style	indicates • terms and texts used in a software interface, e.g.: Click on *Save*. • names of programs or files, e.g. *Windows* or *setup.exe*.
"This style"	indicates • Cross-references to another section, e.g. "Safety information" • cross-references to an external source, e.g. a web address: For more information, go to "http://solutions.us.fujitsu.com/" • names of CDs, DVDs and titles or designations of other materials, e.g.: "CD/DVD Drivers & Utilities" or "Safety/Regulations" manual
Key	indicates a key on the keyboard, e.g: F10
This style	indicates terms and text that are emphasized or highlighted, e.g.: **Do not switch off the device**

Ports and operation controls

This chapter presents the individual hardware components of your device. It gives an overview of the indicators and ports of the device. Please familiarize yourself with these items before you start to work with the device.

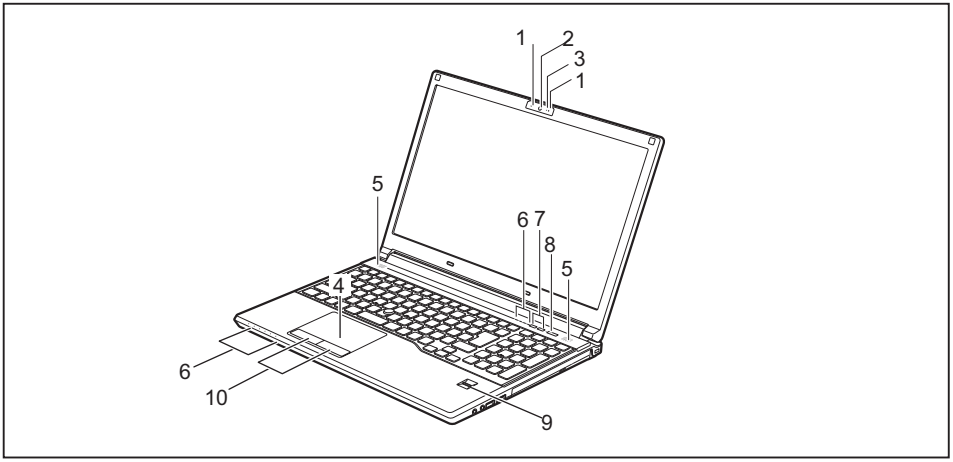
Front

LIFEBOOK E544:



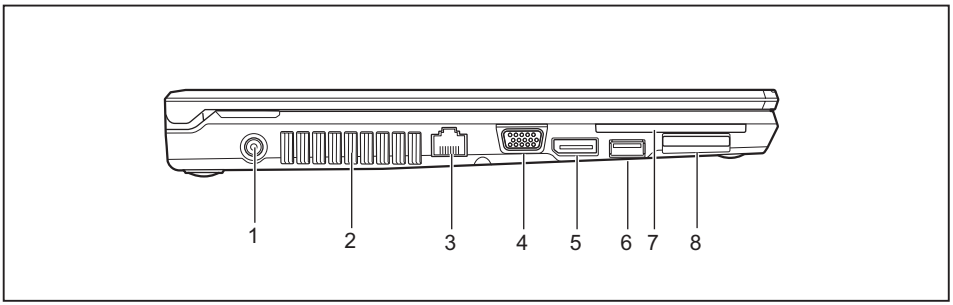
1 = Microphone (optional)
2 = Webcam (optional)
3 = Webcam LED (optional)
4 = Touchpad
5 = Speaker
6 = Status indicators
7 = Application keys (ECO and Wireless)
8 = ON/OFF button
9 = Fingerprint sensor (optional)
10 = Touchpad buttons

LIFEBOOK E554:



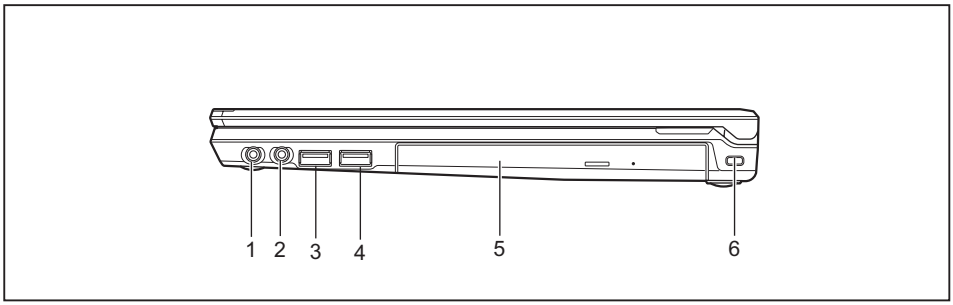
1 = Microphone (optional)
2 = Webcam (optional)
3 = Webcam LED (optional)
4 = Touchpad
5 = Speaker
6 = Status indicators
7 = Application keys (ECO and Wireless)
8 = ON/OFF button
9 = Fingerprint sensor (optional)
10 = Touchpad buttons

Left side



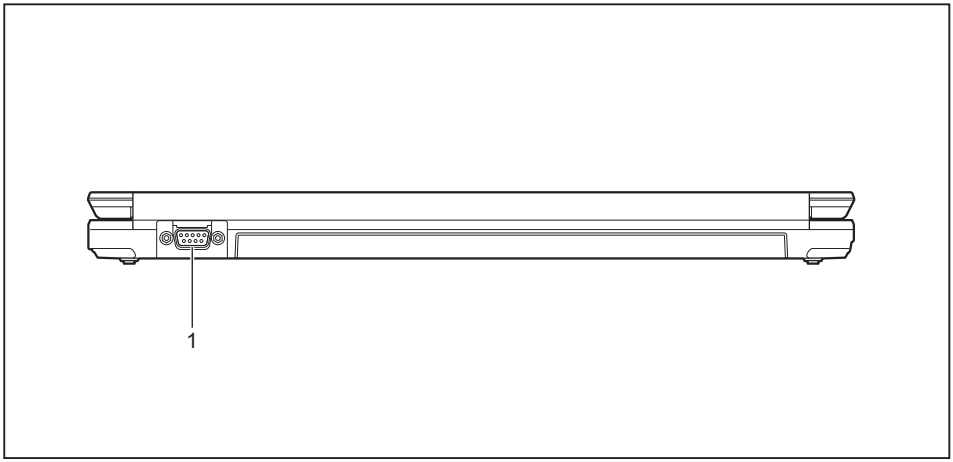
1 = DC input connector (DC IN)
2 = Ventilation slots
3 = LAN port
4 = External monitor port (VGA)
5 = Display Port
6 = USB port 3.0 with charging function (Anytime USB charge)
7 = Smart Card reader (optional)
8 = Memory card slot

Right side



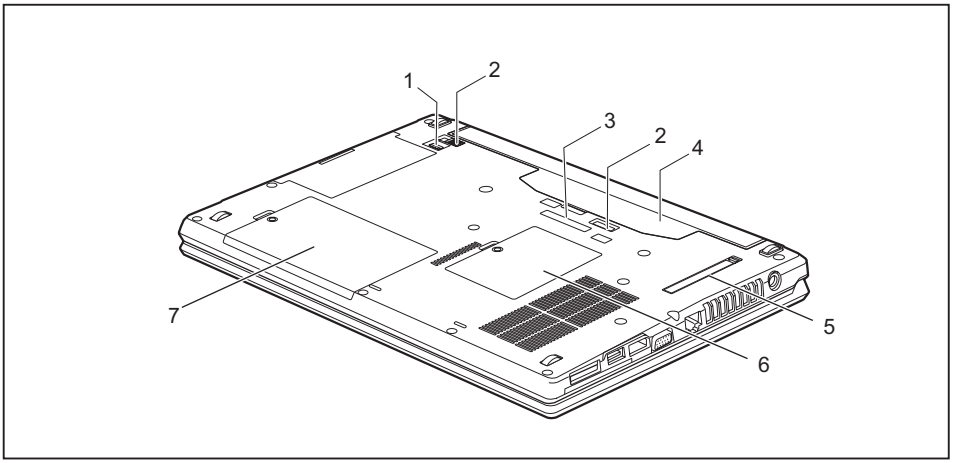
1 = Headphones port
2 = Microphone port
3 = USB port 3.0
4 = USB port 3.0
5 = Modular bay with optional optical drive
6 = Security Lock device

Rear



1 = Optional serial interface
(LIFEBOOK E554 only)

Bottom



1 = Modular bay release latch
2 = Battery lock slider switch
3 = Port replicator port
4 = Battery compartment
5 = Removable dust filter
6 = Memory upgrade compartment
7 = Hard drive access compartment

Important notes

This chapter contains essential safety information which must be followed when working with your notebook. Other notes also provide useful information which will help you with your notebook.

Safety instructions

Please observe the following safety information.

Please pay special attention to the sections in the manual marked with the symbol on the left.

When connecting and disconnecting cables, observe the relevant notes in this operating manual.

Read the information on the ambient conditions in the "Technical data", Page 78 chapter and the "First-time setup of your device", Page 17 chapter before preparing your notebook for use and switching it on for the first time.

When cleaning the device, please observe the relevant notes in the section "Cleaning the notebook", Page 16.

Pay attention to the additional safety notes for devices with radio components provided in the "Safety/Regulations" manual.

Please refer to the notes in the chapter "Removing and installing components during servicing", Page 61.

When handling this device, you will come into contact with lead, a chemical which in California is held to be a possible cause of birth defects and other damage to fertility.

Wash your hands after using the device.

This notebook complies with the relevant safety regulations for data processing equipment. If you have any questions about setting up your notebook in the intended environment, please contact your sales outlet or our Hotline/Service Desk.

Additional safety notes for devices with wireless components

If a wireless component (wireless LAN, Bluetooth) is incorporated in your notebook, you must be sure to observe the following safety notes when using your notebook:

- Switch off the wireless components when you are in an aircraft or driving in a car.
- Switch off the wireless components when you are in a hospital, an operating room or near a medical electronics system. The transmitted radio waves can impair the operation of medical devices.
- Switch off the wireless components, when you let the device get near flammable gases or into hazardous environments (e.g. gas station, paintshops), as the transmitted radio waves can cause an explosion or a fire.

For further information on how to switch the wireless components on and off, refer to chapter "Switching the wireless components on and off", Page 42.

Energy saving

Switch the notebook off when it is not in use. Switch off any connected external devices when they are not in use. If you use the energy saving functions, the notebook uses less power. You will then be able to work for longer before having to recharge the battery.

The energy efficiency is increased and environmental pollution is reduced. You save money and help protect the environment.

Energy saving under Windows

► Make use of the available energy saving functions as described in chapter "Using the energy saving functions", Page 40.

Traveling with your notebook

Please observe the points listed below when traveling with your notebook.

Before you travel

- ► Back up important data stored on your hard disk.
- ► Switch off the radio component for data security reasons. With data traffic via a wireless connection, it is also possible for unauthorized third parties to receive data.

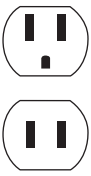
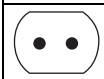
i

Information on activating data encryption is provided in the documentation for your radio component.

- ► If you wish to use your notebook during a flight, check with the flight attendants if its use is safe.

When traveling in other countries

- ► If you are traveling abroad, check that the AC adapter can be operated with the local AC voltage. If this is not the case, obtain the appropriate AC adapter for your notebook. Do not use any other converter!
- ► Check whether the local AC voltage and the AC cable are compatible. If this is not the case, buy an AC cable that suits the local conditions.
- ► Enquire with the corresponding government office of the country you will be traveling to, whether you may use your notebook with its integrated radio component there.
- ► Take the necessary travel adapters with you when traveling abroad. Check the following table to see which travel adapters you will need, or ask your travel organizer.

Power connection	Travel destination
	United States, Canada, Mexico, parts of Latin America, Japan, Korea, Philippines, Taiwan
	Russia and the Commonwealth of Independent States (CIS), much of Europe, parts of Latin America, the Middle East, parts of Africa, Hong Kong, India, much of south-east Asia
	United Kingdom, Ireland, Malaya, Singapore, parts of Africa
	China, Australia, New Zealand

Transporting the notebook

Protect the notebook from severe shocks and extreme temperatures (e.g. direct sunlight in a car).

- ► If your device has an optical drive, remove all optical disks from the drives (e.g. CD, DVD).
- ► Switch the notebook off.
- ► Unplug the AC plug of the AC adapter and all external devices from the power outlets.
- ► Disconnect the AC adapter cable and the data cables for all external devices.
- ► Close the LCD screen.
- ► To protect against damaging jolts and bumps, use a notebook carrying case to transport your notebook.

Cleaning the notebook

Do not clean any interior parts yourself; leave this job to a service technician.

Only use cleaning products designed for computers. Normal household cleaners and polishes can damage the markings on the keyboard and the device, the paintwork or the notebook itself.

Ensure that no liquid enters the notebook.

The LCD screen very sensitive to scratches. Only clean the display surface with a very soft, slightly damp cloth.

- ► Switch the notebook off.
- ► To prevent the device being switched on unintentionally, remove the AC plug of the AC adapter from the power outlet and remove the battery (see chapter "Removing and installing the battery", Page 32).

↳ The casing surfaces may be cleaned with a dry cloth.
If particularly dirty, use a damp cloth which has been dipped in water containing some mild domestic detergent and then well wrung out.

To clean the keyboard and the touchpad if present, you can use disinfectant wipes.

Ensure that no moisture reaches the inside of the device!

First-time setup of your device

Please read the chapter "Important notes", Page 13.

If your device is equipped with a Windows operating system, the necessary hardware drivers and supplied software are already pre-installed.

Before switching it on for the first time, connect the device to the AC voltage using the AC adapter, see "Connecting the AC adapter", Page 18. The AC adapter must remain connected during the whole of the installation process.

A system test is performed when your device is first switched on. Various messages can appear. The display may remain dark for a short time or may flicker.

Please follow the instructions on the screen.

NEVER switch off your device during the first-time setup process.

On delivery, the battery can be found in the battery compartment or in the accessories kit. The battery must be charged if you want to operate your device using the battery.

When used on the move, the built-in battery provides the device with the necessary power. You can increase the operating time by using the available energy saving functions.

For instructions on how to connect external devices (e.g. mouse, printer) to your device, please refer to the operating manual for your device.

Unpacking and checking the device

If you find that damage has occurred during transport, please notify your local sales outlet immediately!

- ► Unpack all the individual parts.
- ► Check your device for any visible damage which may have occurred during transportation.

You may need to reuse the packaging in the future, for example if you need to ship your device.

Choose a location

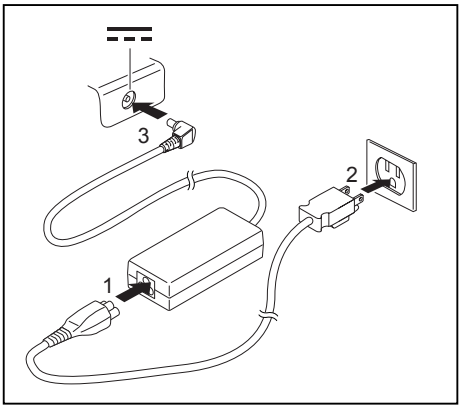
Choose a suitable location for the device before setting it up. In doing so, please follow these instructions:

- Never place the device or the AC adapter on a heat-sensitive surface. The surface could be damaged as a result.
- Never place the device on a soft surface (e.g. carpeting, upholstered furniture, bed). This can block the air vents and cause overheating and damage.
- The underside of the device heats up during normal operation. Prolonged contact with the skin can become unpleasant or even result in burns.
- Place the device on a stable, flat, non-slippery surface. Please note that the rubber feet of the device may mark certain types of delicate surfaces.
- Keep other objects at least 100 mm / 3.97 inches away from the device and its AC adapter to ensure adequate ventilation.
- Never cover the ventilation openings of the device.
- Do not expose the device to extreme environmental conditions. Protect the device against dust, humidity and heat.

Connecting the AC adapter

Observe the safety notes in the enclosed "Safety/Regulations" manual.

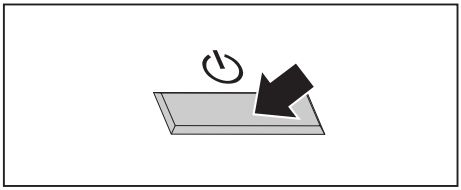
The supplied AC cable conforms to the requirements of the country in which you purchased your device. Make sure that the AC cable is approved for use in the country in which you intend to use it.



► Connect the AC cable (1) to the AC adapter.
► Plug the AC cable (2) into a power outlet.
► Connect the AC adapter cable (3) to the DC jack (DC IN) of the device.

Switching on the device for the first time

To make it easier to use your device for the first time, the operating system is pre-installed on the hard disk.



► Switch your device on.

► During the installation process, follow the on-screen instructions.

You can find information and help on the Windows operating system functions on the Internet at "http://windows.microsoft.com".

Installing Bonus Apps

After you have started your system the first time, you will see a Bonus Apps icon on your desktop.

► Click on the icon to see which additional applications are available for you to install.

↳ Applications that are already installed appear in grey, those that are available for installation appear in blue.

► Select the applications you wish to install by selecting the checkbox adjacent to your selection.

or

► Click *Select All* if you would like to install all available applications.

► To confirm your selection, click *Install*.

Note that in some cases (depending upon which application was selected for installation) after installation completes, the system will prompt you to reboot.

There are also cases in which if multiple applications are selected to install but one of them needs a reboot, the system will reboot and continue installing the rest of the selected applications.

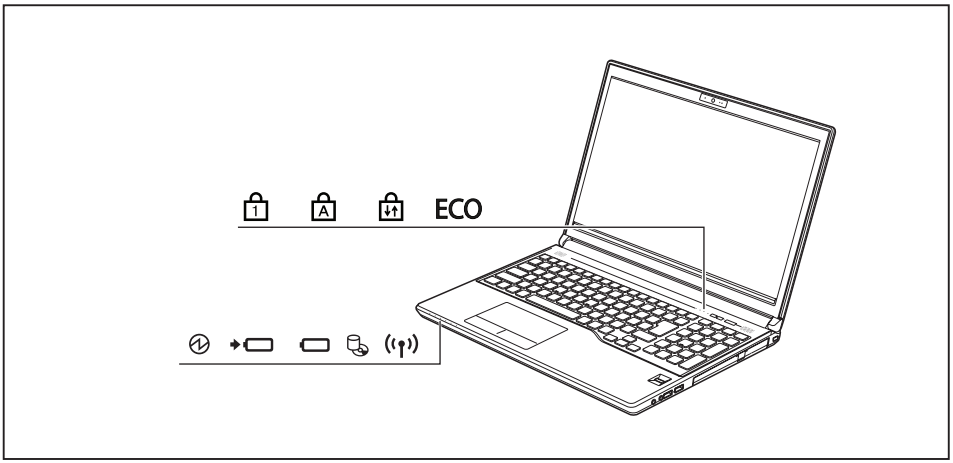
Working with the notebook

This chapter describes the basics for operating your notebook. Please refer to "Connecting external devices", Page 54 for instructions on how to connect external devices such as a mouse and a printer to the notebook.

Please refer to the notes in the chapter "Important notes", Page 13.

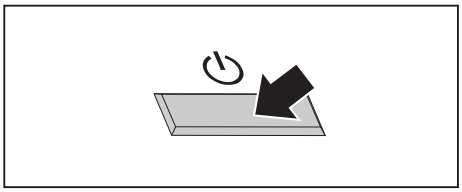
Status indicators

The status indicators provide information about the status of the power supply, the drives and the keyboard functions.



Key	Description
	Power-on indicator/Standby • The indicator is illuminated: The notebook is switched on. • The indicator flashes: The notebook is in standby mode. • Indicator is off: The notebook is switched off.
	Battery charging indicator/AC connection The battery charging level is shown by the rechargeable battery indicator. • The indicator light is green: The rechargeable battery is charged or no rechargeable battery is inserted. • The indicator light is orange: The AC adapter is connected and the rechargeable battery is being charged. • The indicator is flashing orange: The AC adapter is connected but the rechargeable battery cannot be charged as the battery is too hot or too cold for charging. The charging process is continued as soon as the rechargeable battery has reached a permissible temperature again. • The indicator is flashing red: a fault has occurred. • The indicator is not lit up: The AC adapter is not connected.
	Battery indicator • The indicator light is green: The rechargeable battery is charged to between 51% and 100% of its maximum capacity. • The indicator light is orange: The rechargeable battery is charged to between 13% and 50% of its maximum capacity. • The indicator lights up red: The rechargeable battery is charged to between 0% and 12% of its maximum capacity. • The indicator is flashing red: a fault has occurred.
	Drive indicator The indicator is illuminated: One of the drives (e.g. hard disk, CD/DVD) is being accessed.
	Wireless indicator • The indicator is illuminated: The wireless components are switched on. • Indicator is off: The wireless components are switched off.
	Num Lock indicator The indicator is illuminated: The Num key has been pressed. The virtual number keys have been activated. You can output the characters indicated on the upper right of the keys.
	Caps Lock indicator The indicator is illuminated: The Caps Lock key has been pressed. All the characters you type will appear in upper case. In the case of overlay keys, the character printed on the upper left of the key will appear when that key is pressed.
	Scroll Lock indicator The indicator is illuminated: The key combination Fn + Scroll Lock has been pressed. The effect that this key has varies between applications.
ECO	**Energy saving functions indicator** • The indicator is illuminated: One of the energy saving functions is activated. • The indicator is not lit up: The energy saving functions are deactivated.

Switching the notebook on



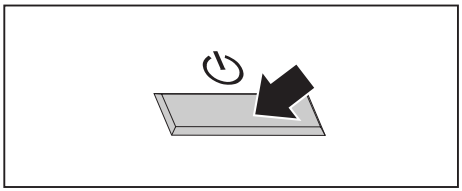
► Open the LCD screen.

► Press the ON/OFF button for about one second to switch the notebook on.

↳ The power-on indicator of the notebook is lit.

Switching the notebook off

Back up your data and close all applications before you switch off your device. Otherwise data might be lost.



► Shut down the operating system correctly.

► If the notebook is not switched off automatically, press the ON/OFF button for approx. five seconds.

► Close the LCD screen.

Keyboard

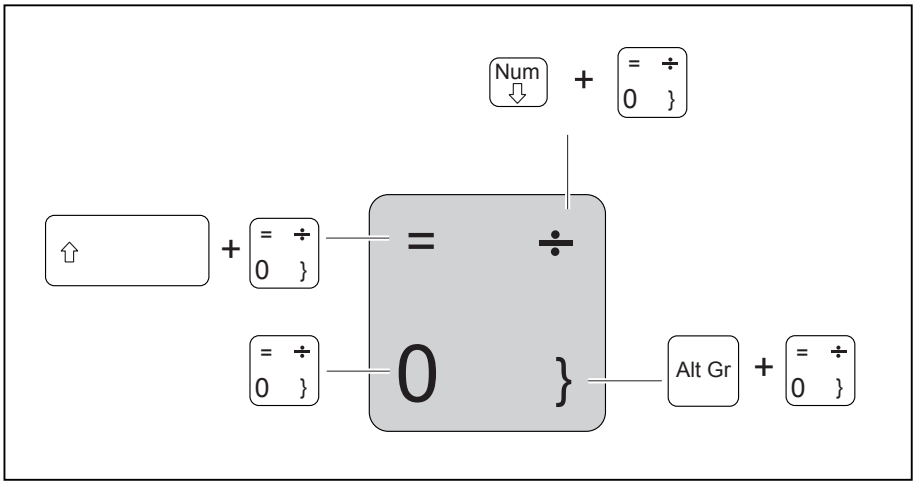
The keyboard of your notebook is subject to continuous wear through normal use. The key markings are especially prone to wear. The key markings are liable to wear away over the life of the notebook.

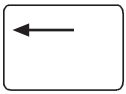
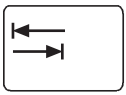
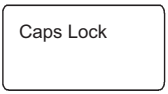
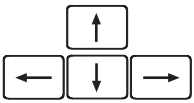
The keyboard has been designed to provide all the functions of an enhanced keyboard. Some enhanced keyboard functions are mapped with key combinations.

The following description of the keys applies to the Windows operating system. Additional functions supported by the keys are described in the relevant manuals supplied with your application programs.

The following illustration shows how to access the different characters on keys with overlaid functions. The example applies when the Caps Lock key has not been activated.

The illustration may differ from your device.



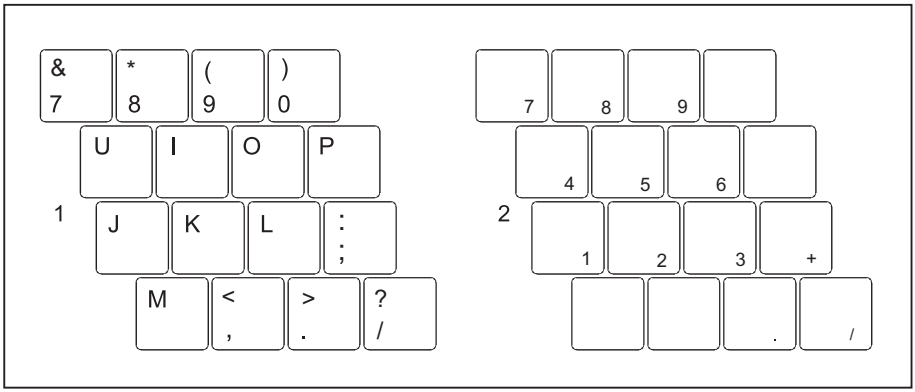
Key	Description
	**Backspace key** The Backspace key deletes the character to the left of the cursor.
	**Tab key** The Tab key moves the cursor to the next tab stop.
	Enter key (return) The Enter key terminates a command line. The command you have entered is executed when you press this key.
	**Caps Lock key** The Caps Lock key activates the Caps Lock mode, and the corresponding icon is displayed in the Windows information area. In Caps Lock mode, all of the characters you type appear in upper case. In the case of overlay keys, the character printed on the upper left of the key will appear when that key is pressed. To cancel the Caps Lock function, simply press the Caps Lock key again.
	Shift key The Shift key causes uppercase characters to appear. In the case of overlay keys, the character printed on the upper left of the key will appear when that key is pressed.
	Fn key The Fn key enables the special functions indicated on overlay keys (see "Key combinations", Page 26).
	**Cursor keys** The cursor keys move the cursor in the direction of the arrow, i.e. up, down, left, or right.
	Windows key The Windows key switches between the start screen and the last used application.
	Menu key The Menu key opens the menu for the active application.

Virtual number keys

LIFEBOOK E544 has virtual number keys, LIFEBOOK E554 has a separate number keypad.

Virtual number keys are provided so that the keys of a number keypad can be used for certain applications. The virtual number keys are recognizable on the keyboard by the numbers and symbols printed in the upper right corner of each key. If you have switched on the virtual number keys, you can output the characters shown on the upper right of the keys.

The key assignment shown below may be different from the keyboard layout of your device.



1 = Character valid when the Num key is not active

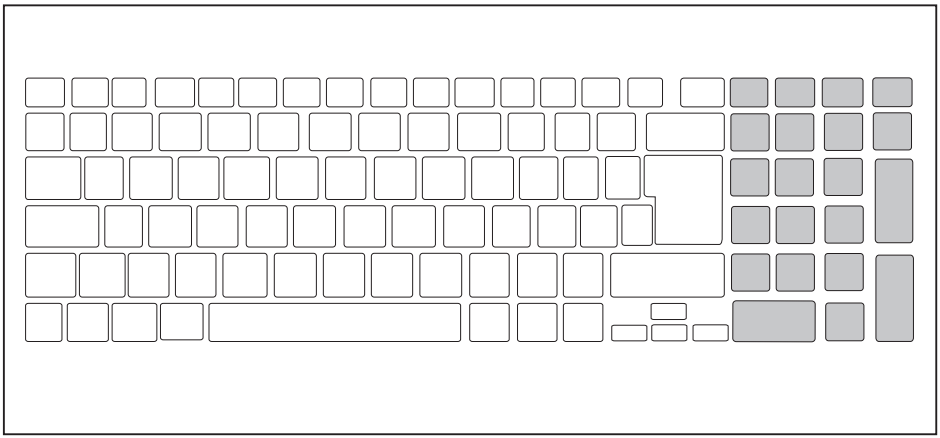
2 = Character valid when the Num key is active

Further information about the status indicators can be found in chapter "Status indicators", Page 20.

Separate number keypad

LIFEBOOK E544 has virtual number keys, LIFEBOOK E554 has a separate number keypad.

The keyboard of your LIFEBOOK E554 notebook has a separate number keypad on the far right.



Key combinations

The following description of key combinations applies to Windows operating systems. Some of the following key combinations may not function in other operating systems or with certain device drivers.

Other key combinations are described in the relevant manuals supplied with your application programs.

Key combinations are entered as follows:

- ► Press the first key in the combination and keep it pressed.
- ► While holding the first key down, press the other key or keys in the combination.

Combination	Description
Fn + F3	**Switch the speakers on and off** This key combination switches your notebook's speakers off and on.
Fn + F4	**Switch the touchpad and touchpad buttons on/off** This key combination switches the touchpad and the touchpad buttons on or off.

Combination	Description
Fn + F6	**Decrease the brightness of the screen** This key combination decreases the brightness of the screen.
Fn + F7	**Increase the brightness of the screen** This key combination increases the brightness of the screen.
Fn + F8	**Decrease the volume** This key combination reduces the volume of the internal speakers.
Fn + F9	**Increase volume** This key combination increases the volume of the internal speakers.
Fn + F10	**Switch between display outputs** Use this key combination to select which monitor is used for display if an external monitor is connected. Display output is possible: • only on the notebook's LCD screen • on the LCD screen of the notebook and the external monitor at the same time • only on the external monitor This setting is useful if you would like a high resolution and a high refresh rate on an external monitor.
Alt + ⇤⇥	**Switch between open applications** Use this key combination to switch between several open applications.
Ctrl + Alt + Del	**Windows security/Task Manager** This key combination opens the Windows security/Task Manager window.
⇧ Shift + ⇤⇥	**Back tab** This key combination moves the cursor back to the previous tab stop.

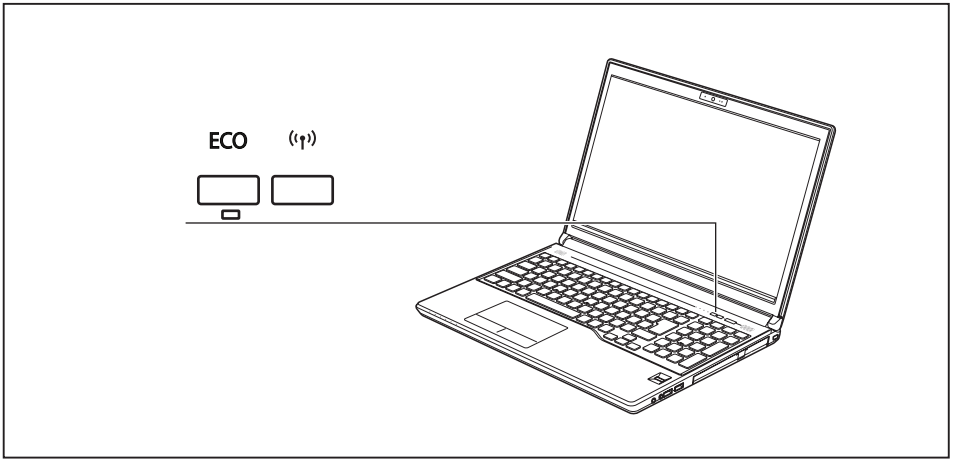
Key combinations using the Windows keys are detailed in the manual for your operating system.

Country and keyboard settings

► Make the country and keyboard settings as described in the documentation for your operating system.

Application keys (ECO and Wireless)

Your notebook is equipped with two application keys.



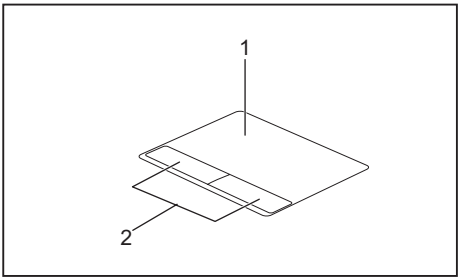
Key	Description
ECO	**Eco button (E key)** The E key is a convenient way of activating and deactivating energy saving functions (e.g. reducing the brightness of the screen), see also "Using the energy saving functions", Page 40. If the device is switched off, you can check the battery charging level with this key. After pressing this key, the battery indicator will illuminate briefly. For a description of the indicator colors, see "Status indicators", Page 20.
((ı))	**Wireless device switch** This application key is used to start the *WirelessSelector* software. The wireless components that have been activated in the *BIOS Setup* can be switched on and off individually.

Touchpad and touchpad buttons

Keep the touchpad clean. Protect it from dirt, liquids and grease.

Do not use the touchpad if your fingers are dirty.

Do not rest heavy objects (e.g. books) on the touchpad or the touchpad buttons.



1= Touchpad

2 = Touchpad buttons

The touchpad enables you to move the mouse pointer on the monitor.

The touchpad buttons allow you to select and execute commands. They correspond to the buttons on a conventional mouse.

You can also deactivate the touchpad via a key combination, so that you cannot move the pointer on the monitor unintentionally (see chapter "Key combinations", Page 26).

Moving the pointer

► Move your finger on the touchpad.

↳ The pointer will move.

Selecting an item

► Move the pointer to the item you wish to select.

► Tap the touchpad once or press the left button once.

↳ The item is selected.

Executing commands

► Move the pointer to the field you wish to select.

► Tap the touchpad twice or press the left button twice.

↳ The command is executed.

Dragging items

► Select the desired item.

► Press and hold the left button and drag the item to the desired position with the finger on the touchpad.

↳ The item will be moved.

LCD screen

High-quality LCD screens (TFT) are installed in Fujitsu notebooks. For technical reasons, these screens are manufactured for a specific resolution. An optimal, clear picture can only be ensured in the resolution intended for the particular monitor. A resolution which differs from the specification can result in an unclear picture.

The resolution of the monitor of your notebook is optimally set at the factory.

Current production technology cannot guarantee an absolutely fault-free screen display. A few isolated constantly lit or unlit pixels (picture elements) may be present. The maximum permitted number of such faulty pixels is specified in the international standard ISO 9241-307 (Class II).

Example:

A monitor with a resolution of 1280 x 800 has 1280 x 800 = 1024000 pixels. Each pixel consists of three subpixels (red, green and blue), so there are almost 3 million subpixels in total. According to ISO 9241-307 (class II), a maximum of 2 light and 2 dark pixels and in addition 5 light or 10 dark subpixels or an equivalent mix (1 light subpixel counts as 2 dark subpixels) are allowed to be defective.

Pixel	A pixel consists of 3 subpixels, normally red, green and blue. A pixel is the smallest element that can be generated by complete functionality of the display.
Subpixel	A subpixel is a separately addressable internal structure within a pixel that enhances the pixel function.
Cluster	A cluster contains two or more defective pixels or subpixels in a 5 x 5 pixel block.

Background lighting

LCD screens are operated with background lighting. The luminosity of the background lighting can decrease during the period of use of the notebook. However, you can set the brightness of your monitor individually.

Synchronizing the display on the LCD screen and an external monitor

For more information, please refer to Chapter "Key combinations", Page 26 under "Switching between display outputs".

Webcam

Depending on the configuration, your device may include an integral webcam.

Depending on the software used, you can use your webcam to take pictures, record video clips or take part in web chats.

The webcam has its own status indicator. The indicator lights up when the webcam is active.

- The picture quality depends on the lighting conditions and the software being used.
- You can only operate the webcam with a particular application (e.g. an Internet telephony program or a video conferencing program which supports a webcam).
- When using the webcam, the notebook base must not wobble.
- The webcam automatically adjusts itself to the current light level. For this reason the LCD display may flicker while the light level is adjusted.

Further information on use of the webcam and additional settings for your webcam can be found in the help function of the program using the webcam.

Rechargeable battery

During use as a portable, the notebook runs on its built-in battery. You can increase the service life of the battery by caring for the battery properly. The average battery service life is around 500 charge/discharge cycles.

You can extend the battery service life by taking advantage of the available energy saving functions.

Charging, caring for and maintaining the battery

The notebook battery can only be charged if the ambient temperature is between 5°C / 41°F and a maximum of 35°C / 95°F.

You can charge the battery by connecting the notebook to the AC adapter (see "Connecting the AC adapter", Page 18).

If the battery is running low you will hear a warning alarm. If you do not connect the AC adapter within five minutes of the warning alarm described above, your notebook will automatically switch off.

Monitoring the battery state of charge

Windows also has a "Battery charge meter" in the taskbar for monitoring the battery capacity. When you place the mouse pointer on the battery symbol, the system displays the state of charge of the battery.

Battery storage

The battery should be stored in a dry environment at a temperature between 0°C / 32°F and 30°C / 86°F. The lower the storage temperature, the lower the rate of self-discharge.

If you will be storing batteries for a longer period (more than two months), the battery charge level should be approx. 30%. To prevent exhaustive discharge which would permanently damage the battery, check the level of charge of the battery at regular intervals.

To be able to make use of the optimum capacity of the battery, you should allow the battery to fully discharge and then recharge it.

If you will not use batteries for long periods, remove them from the notebook. Never store batteries in the device.

Removing and installing the battery

Only use batteries approved by Fujitsu for your notebook.

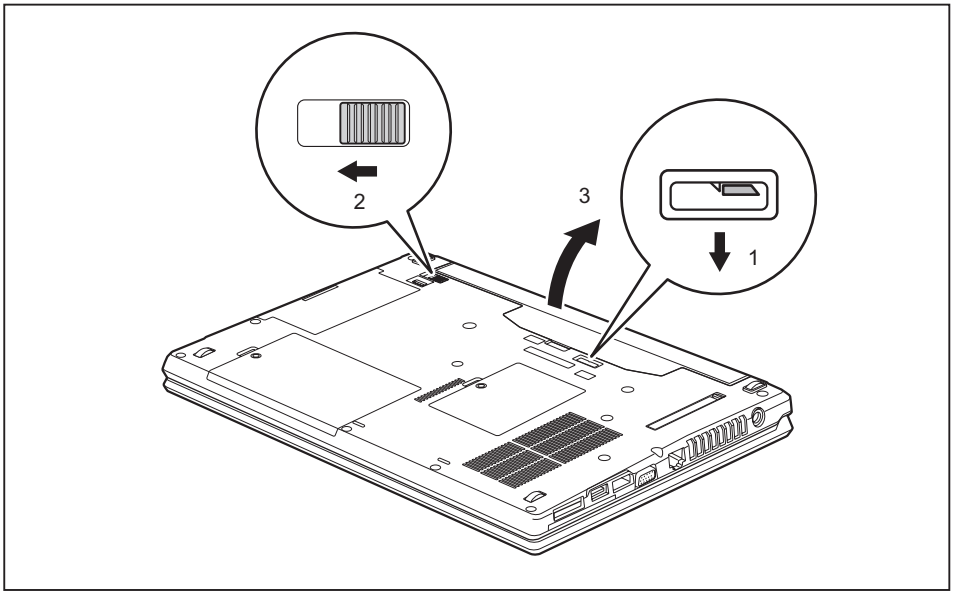
Never use force when fitting or removing a battery.

Make sure that no foreign bodies get into the battery connections.

Never store a battery for long periods in the discharged state. This can make it impossible to recharge.

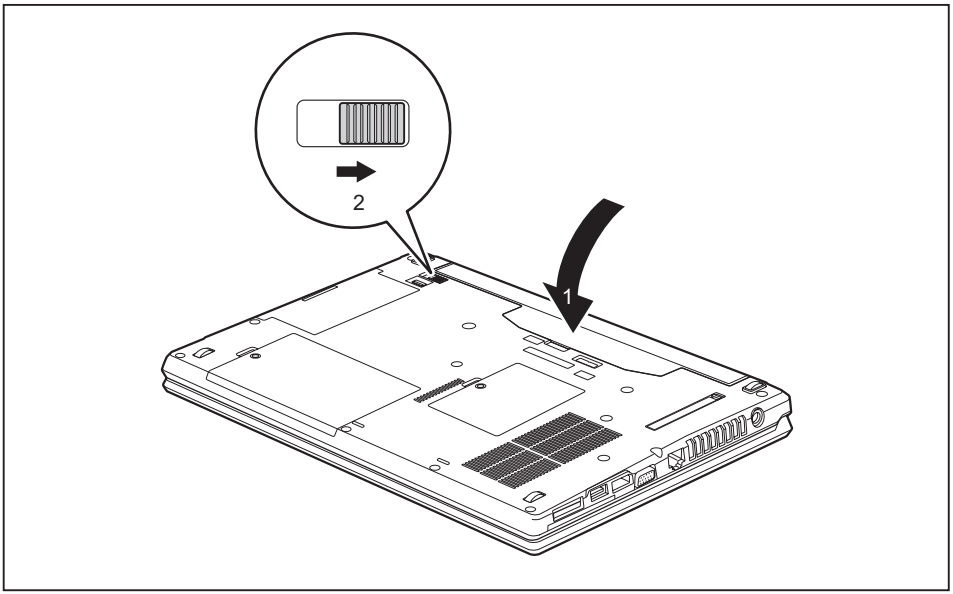
Removing a rechargeable battery

► Prepare for removal, see chapter "Preparing to remove components", Page 62.



► Slide the slider switch in the direction of the arrow (1) and hold it in place.
► Slide the slider switch in the direction of the arrow (2).
► Remove the rechargeable battery from the battery compartment (3).

Installing a rechargeable battery



► Position the rechargeable battery at the edge.
► Insert the rechargeable battery into the battery compartment until it engages positively (1).
► Slide the slider switch in the direction of the arrow (2).
► Complete the installation, see chapter "Finishing component removal", Page 68.

Modular bay devices

The design of your notebook enables the flexible use of notebook batteries and drives. The following modular bay devices can be operated in the modular bay of your notebook:

- Second hard disk drive
- DVD Super Multi
- Weight saver

Only use modular bay devices designed for your notebook.

Do not use force when installing or removing the modular bay device.

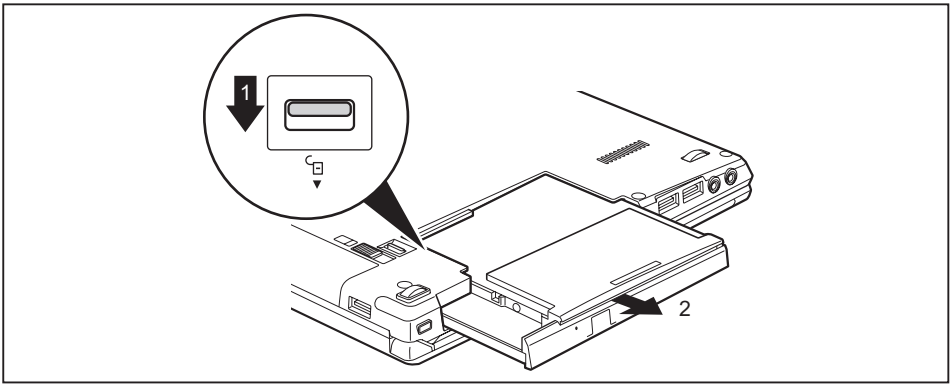
Make sure that no foreign objects enter the modular bay.

You can swap modular bay devices during operation. This means you do not need to switch off the notebook.

Log off the modular bay device via the corresponding symbol in the task bar.

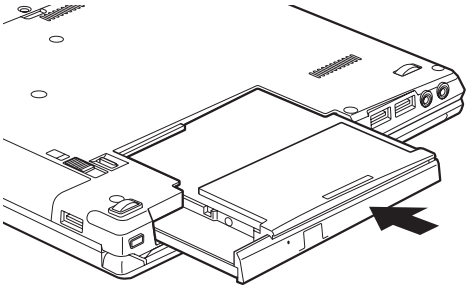
The modular bay device can now be removed without any further actions being necessary.

Removing a modular bay device



► Slide the release mechanism (1) in the direction of the arrow and hold.
► Pull the modular bay device (2) out of the modular bay.

Installing a modular bay device



► Place the modular bay device into the modular bay so that the contacts enter first.
► Push the modular bay device into the modular bay until you feel it lock into place.

Optical drive

This product contains a light-emitting diode, classified in accordance with IEC 608251:2007: LASER CLASS 1, and therefore must not be opened.

Handling optical disks

Observe the following guidelines when handling optical disks:

- Avoid touching the surface of an optical disk. Only hold the optical disk at the edge.
- Always store the optical disk in its case. This will prevent the optical disk from becoming dusty, scratched or damaged in any other way.
- Protect your optical disk against dust, mechanical vibrations and direct sunlight.
- Do not store an optical disk in areas subject to high temperatures or humidity.

You may use 8 cm / 3.15 inch or 12 cm / 4.7 inch diameter optical disks in the drive.

When using a poor quality optical disk, vibrations and read errors may occur.

CD/DVD indicator

The CD/DVD indicator flashes when an optical disk is inserted. The indicator goes out when the drive is ready for reading. The indicator lights up when the drive is being accessed. You must never remove the optical disk under any circumstances while the indicator is lit.

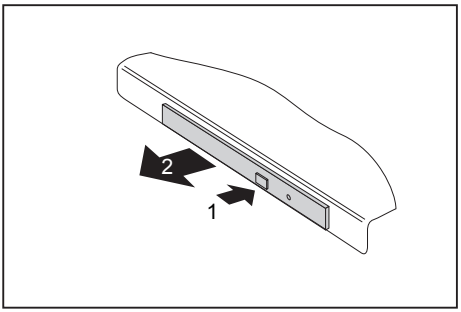
i

If the CD/DVD indicator does not go out after inserting an optical disk, but instead continues to flash, this means that the drive cannot access the optical disk.

Either the optical disk is damaged or dirty or you are using an optical disk that the drive cannot read.

Inserting or removing an optical disk

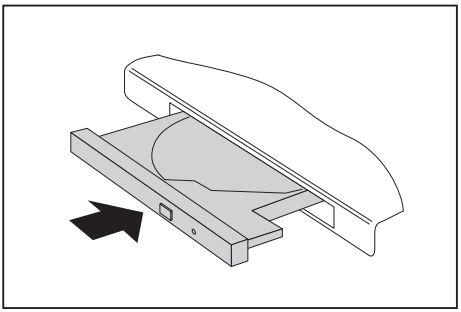
The notebook must be switched on.



► Push the insert/eject button (1).

↳ The drive tray will open.

► Gently pull the drive tray (2) completely out.



► Place the optical disk in the drive tray with the printed side facing upwards.

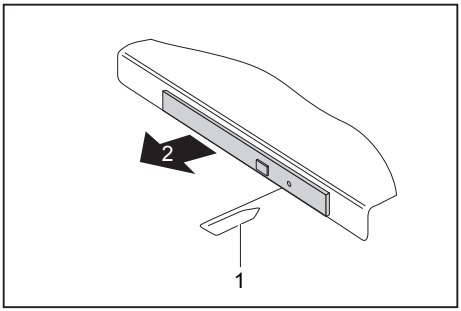
or

► Remove an inserted optical disk.

► Push in the drive tray again until you feel it lock into place.

Manual removal (emergency removal)

In the event of a power failure or damage to the drive, it may be necessary to manually remove the optical disk.



► Switch your notebook off.

► Push a pen or a piece of wire (such as a paper clip) firmly into the opening (1).

↳ The drive tray will be ejected. You can now pull the drive tray (2) out of the drive.

Removing and replacing the removable dust filter

To ensure optimum cooling of your notebook's components, you should clean the ventilation slots of the heat sink after prolonged use.

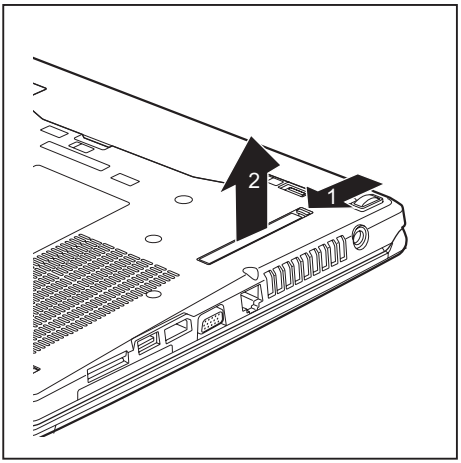
This ensures optimum fan performance. You can achieve the best cleaning results with a small hand-held vacuum cleaner.

If necessary, use a dry brush to remove dust from the ventilation slots.

Do not use any cleaning liquids! Ensure that no liquid enters the device.

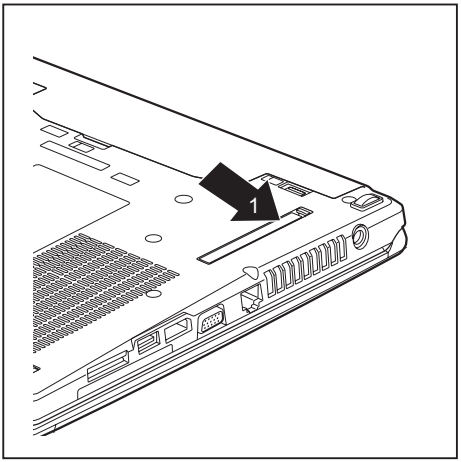
To avoid overheating of the device, do not remove the removable dust filter when the device is switched on.

► Prepare for removal, see chapter "Preparing to remove components", Page 62.



► Press and hold the lock of the removable dust filter (1) and remove it from its location (2).

► Clean the dust chamber.



► Insert the removable dust filter into its location (1) at an angle as shown, and ensure that you feel it click into place.

► Complete the removal, see chapter "Finishing component removal", Page 68.

Using the energy saving functions

The notebook uses less power when the available energy-saving functions are used. You will then be able to work longer when using the battery before having to recharge it.

The energy efficiency is increased and environmental pollution is reduced. By choosing the best power options, you can make significant savings and at the same time help protect the environment.

When you fold down and close the LCD screen, depending on the setting in Windows, the notebook automatically enters a power saving mode.

- ► Set the energy saving functions in your Control Panel.
- ► Set the screen saver in your Control Panel.

or

- ► Right-click on the desktop. Activate the screen saver by clicking on *Personalize – Change Screen Saver*.

If you need further information about an option, you can get help with most settings by pressing F1 to open the Microsoft Help.

When the notebook is in energy saving mode, the following must be remembered:

During energy saving mode, open data is held in main memory or in a swap file on the hard disk.

Never switch the notebook off while it is in an energy saving mode. If the built-in battery is nearly flat, close all open files and do not go into energy saving mode.

If you do not intend to use your notebook for a long period of time:

- ► Exit energy saving mode if necessary by moving the mouse, making an entry at the keyboard or by switching on the notebook.
- ► Close all opened programs and completely shut down the notebook.

Memory cards

Your notebook is equipped with an integrated memory card reader.

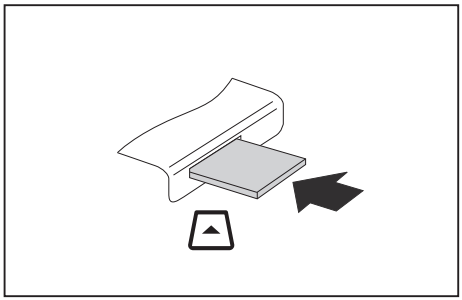
Follow the manufacturer's instructions when handling the memory cards.

Supported formats

Your notebook supports the following format:

- Secure Digital (SD™ Card)

Inserting the memory card

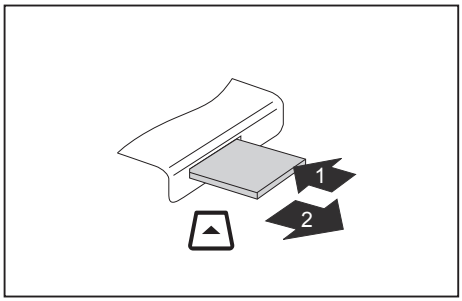


► Carefully slide the memory card into the slot. The label should be facing upward. Do not apply excessive force, as otherwise the delicate contact surfaces could be damaged.

↳ Depending on the particular type used, the memory card may protrude slightly from the slot.

Removing the memory card

To avoid any loss of data, always follow the correct procedure for removing the card (see the documentation for your operating system).



► On devices with card locking: Press on the memory card (1).

↳ The memory card is released and can now be removed.

► Pull the memory card out of the slot (2).

Speaker and microphones

You can find information about the exact position of the speaker and microphones in chapter "Ports and operation controls", Page 9.

Please refer to chapter "Key combinations", Page 26 for information on setting the volume and also enabling/disabling the speakers using key combinations.

If you attach an external microphone, the built-in microphone is disabled.

When you connect headphones or external speakers, the built-in speakers are disabled.

You can find information on connecting headphones and a microphone in chapter "Connecting external devices", Page 54.

Wireless LAN/Bluetooth components

The installation of wireless components not approved by Fujitsu will invalidate the certifications issued for this device.

Switching the wireless components on and off

► Press the button to start the *WirelessSelector*.

↳ The wireless indicator will illuminate when one or more wireless components are switched on.

If you switch off the wireless components, the wireless LAN antenna and the Bluetooth will also be switched off.

You can activate and deactivate the installed wireless components individually using the *WirelessSelector* program

Pay attention to the additional safety notes for devices with wireless components provided in the "Safety/Regulations" manual.

Details on using a wireless LAN can be found in the online help system included in the wireless LAN software.

You can find more information on how to use Bluetooth on the CD you received with your Bluetooth software.

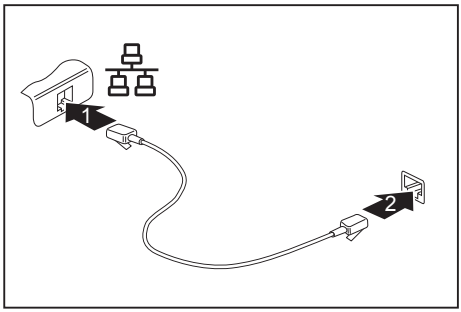
Further information on WLAN and Bluetooth

For further information about WLAN or Bluetooth, please refer to the appendix of this Operating Manual.

For WLAN specifications, see chapter "WLAN specifications", Page 79.

Ethernet and LAN

The internal network module of your notebook supports Ethernet LAN. You can use it to establish a connection to a local network (LAN = Local Area Network).



- ► Connect the network cable to the LAN port of the notebook (1).
- ► Connect the network cable to your network connection (2).

Your network administrator can help you to configure and use the LAN connections.

The network cable is not included in the delivery scope. This type of cable can be obtained from a specialist dealer.

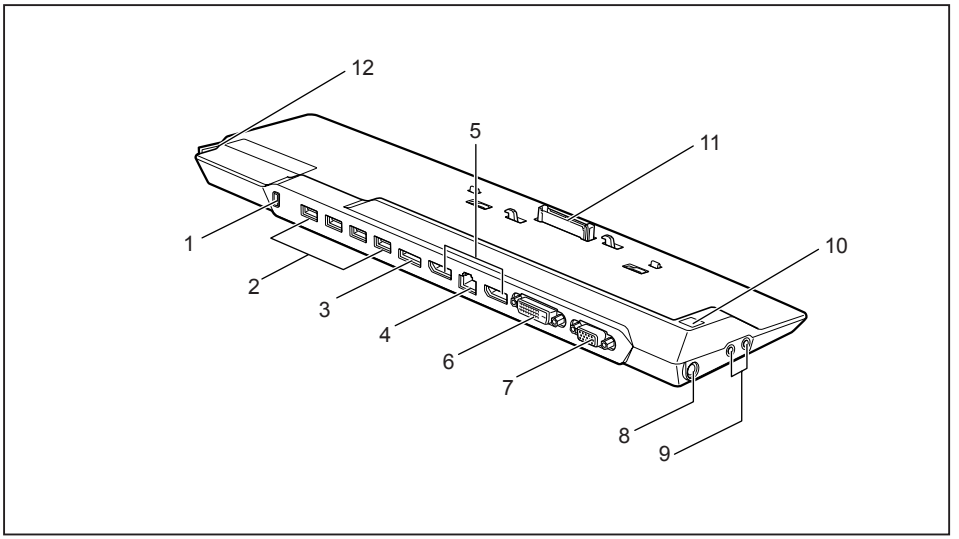
Your port replicator

Your port replicator is a device that helps you to quickly connect your notebook to your peripheral devices, such as a monitor, printer, etc.

The features offered by the port replicator include standard ports for monitor, audio, mouse and keyboard.

You need only dock the notebook in order to work with your peripheral devices.

Ports on the port replicator



1 = Security Lock device
2 = USB ports (USB 3.0)
3 = eSATA port
4 = LAN port
5 = Display Port
6 = DVI-D monitor port
7 = External monitor port (VGA)
8 = DC input connector (DC IN)
9 = Headphones and microphone port
10 = ON/OFF button
11 = Connector on the port replicator for the docking port on the bottom of the notebook
12 = Unlocking lever

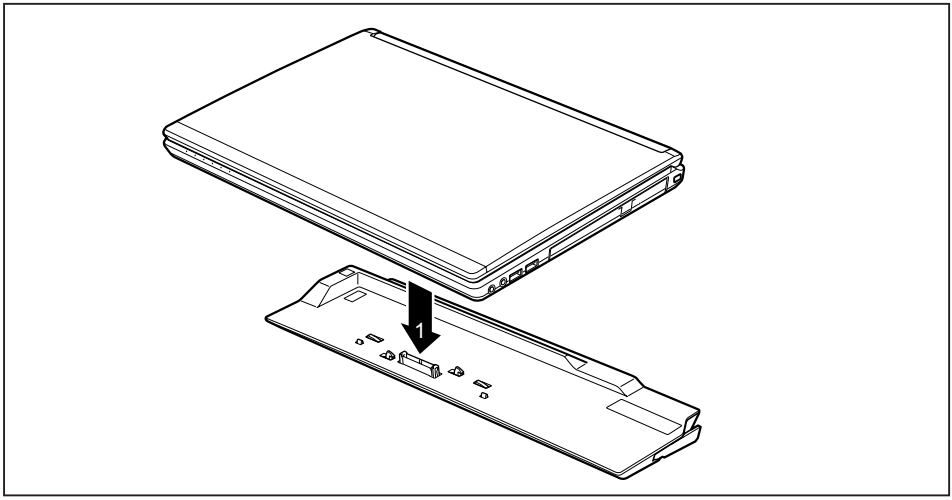
The DVI port and Display Port cannot be used at the same time.

Connecting the notebook to the port replicator

When the notebook is used in combination with the port replicator, the AC adapter must always be connected to the port replicator.

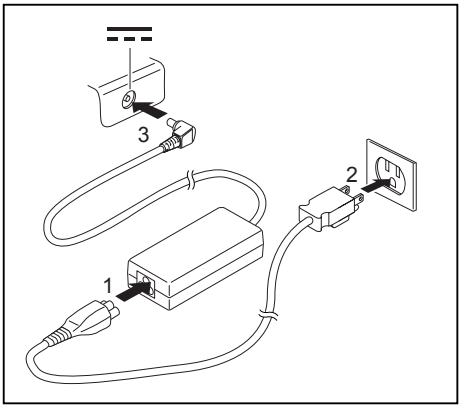
We recommend that the notebook is not operated with the LCD screen closed when the notebook is connected to the port replicator. The resulting overheating can cause reduced performance and increased activity of the integrated fan.

- ► If the AC adapter is plugged into the power outlet, unplug it from the power outlet.
- ► Disconnect the AC adapter from the notebook.



- ► Position the notebook so that it is in line with the back edge of the port replicator.
- ► Place the notebook onto the port replicator (1) and ensure that it locks into place correctly.

Connecting the AC adapter to the port replicator

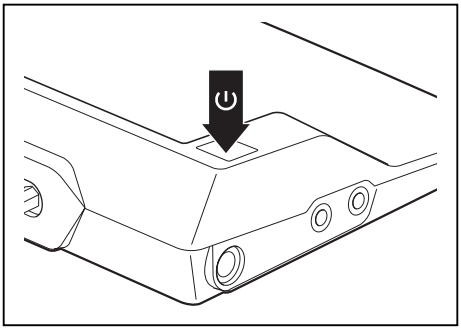


- ► Connect the AC cable to the AC adapter (1).
- ► Plug the AC cable into the power outlet (2).
- ► Connect the AC adapter cable to the DC jack (DC IN) of the port replicator (3).

i

When the notebook is connected to a port replicator, the operating system creates a hardware profile for the "Docked" mode. In this profile, for example, the monitor which was last used for output is saved as a setting. This profile will be loaded as soon as the notebook is connected to a port replicator of the same type.

Switching on the notebook via the port replicator

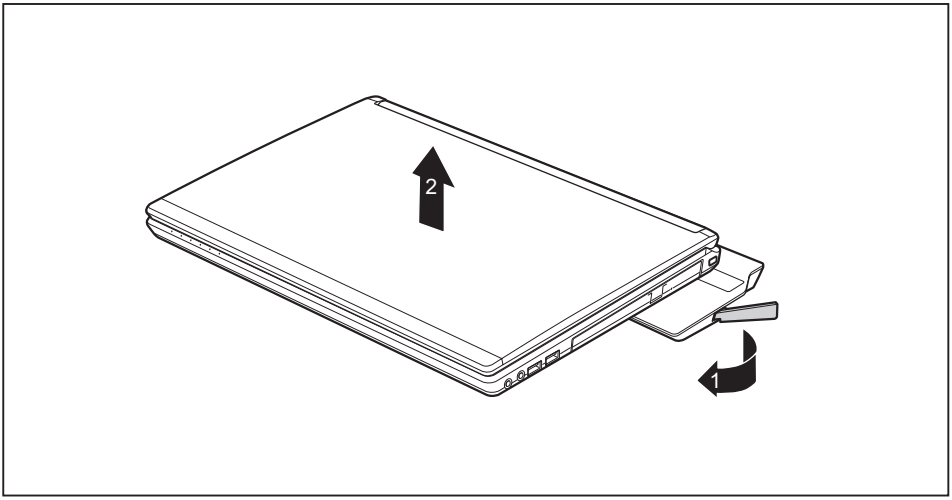


- ► Press the ON/OFF button on the port replicator to switch the notebook on.
- ↳ The power-on indicator of the port replicator lights up.

Disconnecting the notebook from the port replicator

Problems may occur if the notebook is removed from the port replicator during operation. We recommend that the notebook is switched off or that the appropriate undocking function provided by the operating system is executed.

► Switch the notebook off.



► Pull the unlocking lever in the direction of the arrow (1), until you hear the notebook unlatch.
► Lift off the notebook (2).

Security functions

Your notebook has a variety of security functions that you can use to protect your system and your personal data from unauthorized access.

This chapter explains how to use these functions, and what the benefits are.

Please remember that in some cases, for example, forgetting your password, you may be locked out of the system and unable to access your data. Therefore, please note the following information:

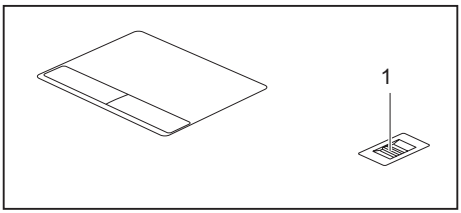
- Make regular backups to external optical disks such as external hard drives, CDs, DVDs or Blu-ray Discs.
- Some security functions need you to choose passwords. Make a note of the passwords and keep them in a safe place.

If you forget your passwords you will need to contact our Service Desk. Deletion or resetting of passwords are not covered by your warranty and a charge will be made for assistance.

Configuring the fingerprint sensor

Whether your device has a fingerprint sensor or not depends on the device configuration which you ordered.

The fingerprint sensor can record the image of a fingerprint. With additional fingerprint software, this image can be processed and used instead of a password.



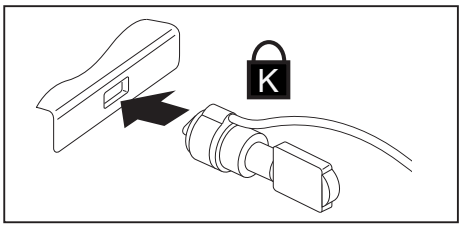
► Install the fingerprint software to be able to use the fingerprint sensor (1).

You can obtain further information on the fingerprint sensor in the "appendix: Miscellaneous Information".

Using the Security Lock

Your device comes with a Security Lock mechanism for the Kensington Lock Cable. You can use the Kensington Lock Cable, a sturdy steel cable, to help protect your notebook from theft. The Kensington Lock Cable is available as an accessory.

Fujitsu recommends the use of a combination lock.



► Fit the Kensington Lock Cable to the mechanism on your notebook.

Attach another Kensington Lock Cable to your port replicator to protect your port replicator from theft as well.

Configuring password protection in BIOS Setup Utility

Before using the various options for password protection in the *BIOS Setup Utility*, please proceed as follows to increase data security:

Make a note of the passwords and keep them in a safe place. If you forget your supervisor password you will not be able to access your notebook. Passwords are not covered by your warranty and a charge will be made for assistance.

Your password can be up to eight characters long and can contain letters and numbers. No distinction is made between uppercase and lowercase.

Protecting BIOS Setup Utility (supervisor password and user password)

If you have opened these operating instructions on the screen, we recommend that you print them out. You cannot call up the instructions on the screen while you are setting up the password.

The supervisor password and the user password both prevent unauthorized use of the *BIOS Setup Utility*. The supervisor password allows you to access all of the functions of the *BIOS Setup Utility*, while the user password will only give you access to some of the functions. You can only set up a user password if a supervisor password has already been assigned.

Calling and using the *BIOS Setup Utility* is described in the chapter "Settings in BIOS Setup Utility", Page 69.

Assigning the supervisor and user passwords

- ► Start the *BIOS Setup Utility* and go to the *Security* menu.
- ► Select the *Set Supervisor Password* field and press the Enter key.
- ↳ With *Enter new Password*: you are asked to enter a password.
- ► Enter the password and press the Enter key.
- ↳ *Confirm new Password* requires you to confirm the password.
- ► Enter the password again and press the Enter key.
- ↳ *Changes have been saved* is displayed as a confirmation that the new password has been saved.
- ► To set the user password, select *Set User Password* and proceed exactly as when configuring the supervisor password.
- ↳ If you do not want to change any other settings, you can exit *BIOS Setup Utility*.
- ► In the *Exit* menu, select the option *Save Changes & Exit*.
- ► Select *Yes* and press the Enter key.
- ↳ The notebook is then rebooted and the new password comes into effect. It will now be necessary to first enter your supervisor or user password in order to open the *BIOS Setup Utility*. Please note that the user password only provides access to a few of the BIOS settings.

Changing the supervisor password or user password

You can only change the supervisor password when you have logged into the *BIOS Setup Utility* with the supervisor password.

- ► Start the *BIOS Setup Utility* and go to the *Security* menu.
- ► When changing the password, proceed exactly as when assigning a password.

Removing passwords

To remove a password (without setting a new password) perform the following steps:

► Start the *BIOS Setup Utility* and go to the *Security* menu.
► Highlight the *Set Supervisor Password* or *Set User Password* field and press the Enter key.
↳ You will be requested to enter the current password by the *Enter Current Password* prompt. *Enter New Password* will appear and you will be requested to enter a new password.
► Press the Enter key twice at this request.
► In the *Exit* menu, select the option *Save Changes & Exit*.
► Select *Yes* and press the Enter key.
↳ The notebook will now reboot with the password removed.
With the supervisor password, you simultaneously deactivate the user password.

Password protection for booting the operating system

With the supervisor password you have set in the *BIOS Setup Utility* (see section "Assigning the supervisor and user passwords", Page 50), you can also prevent booting of the operating system.

Activating system protection

► Start the *BIOS Setup Utility* and go to the *Security* menu.
► Select the *Password on Boot* option and press the Enter key.
► Select the option you require (*Disabled*, *First Boot* or *Every Boot*) and press the enter key
► Select the *Save Changes & Exit* option under *Exit*.
↳ The notebook will reboot. You will be prompted to enter your password (the supervisor password).

Deactivating system protection

► Start the *BIOS Setup Utility* and go to the *Security* menu.
► Select the *Password on Boot* option and press the Enter key.
► Select the *Disabled* option and press the Enter key.
↳ If you do not want to change any other settings, you can exit *BIOS Setup Utility*.
► Select the *Save Changes & Exit* option under *Exit*.
↳ The notebook will reboot. The system is no longer password-protected.

Password protection for the hard disk

If a supervisor password was set, an additional password for the hard disk can be set in the *Hard Disk Security* menu.

The hard disk is protected by this password. Data on this hard disk can then only be read in another system if the correct password is entered.

Trusted Platform Module - TPM (device dependent)

To use the TPM, you must enable the TPM in the *BIOS Setup* **before the software is installed**. The condition for this is that you have assigned at least the supervisor password (see "Security functions", Page 48).

Enabling TPM

- Requirement: You have assigned a supervisor password (see "Security functions", Page 48).

► Call BIOS Setup and select the *Security* menu.

► Mark the *TPM (Security Chip) Setting* field and press the Enter key.

► Select the *"Security Chip" "Enabled"* entry to enable the TPM

↳ Once you have enabled the TPM by rebooting, the *Clear Security Chip* menu item appears.

If the TPM was already in use, you can use *Clear Security Chip* to clear the holder in the TPM. With *Enabled*, all secret keys (e.g. SRK - Storage Root Keys, AIK - Attestation Identity Keys etc.) generated by applications are deleted.

Take note that you can then no longer access the data you have encrypted on the holder-based keys!

► Select the *Exit Saving Changes* option in the Exit menu.

► Press the Enter key and select *Yes*.

↳ The notebook restarts and the TPM is switched on after the reboot.

Disabling TPM

- Requirement: You have assigned a supervisor password (see "Security functions", Page 48).

► Call BIOS Setup and select the *Security* menu.

► Mark the *TPM (Security Chip) Setting* field and press the Enter key.

► Select the *"Security Chip" "Disabled"* entry to deactivate the TPM.

► From the *Exit* menu, choose the option *Exit Saving Changes*.

► Press the Enter key and select *Yes*.

↳ The notebook will now reboot with TPM deactivated.

Smart Card reader

Smart Cards are not supplied as standard equipment. You can use all Smart Cards that comply with the ISO standard 7816-1, -2 or -3. These Smart Cards are available from various manufacturers.

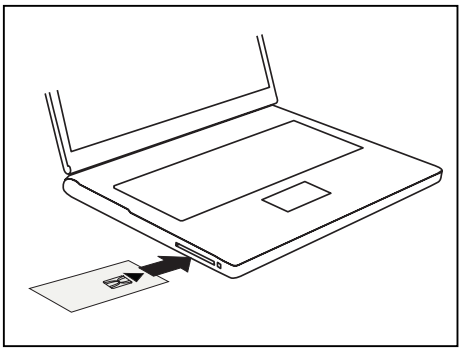
With the appropriate software you can use your Smart Card as an alternative to password protection, but also as a digital signature, for encrypting your e-mails or for home banking.

We recommend that you always use two Smart Cards. Always keep one of the Smart Cards in a safe place if you are carrying the other Smart Card with you.

Inserting the Smart Card

Do not use force when inserting and removing the Smart Card.

Make sure that foreign objects do not fall into the Smart Card reader.



► Slide the Smart Card into the Smart Card reader with the chip facing upwards (or downwards depending on the device) and to the front.

Connecting external devices

Under all circumstances, please observe the safety notes provided in the "Important notes", Page 13 chapter before connecting or disconnecting any devices to or from your notebook.

Always read the documentation supplied with the device you wish to connect.

Never connect or disconnect cables during a thunderstorm.

Never pull at a cable when disconnecting it. Always grasp the plug.

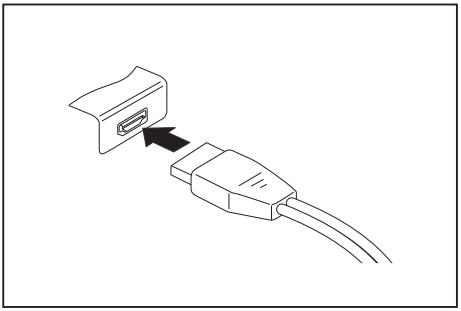
Follow the steps in the sequence below when connecting or disconnecting devices to your notebook:

With some devices such as USB devices, it is not necessary to switch off the notebook and the device before connecting/disconnecting. For more information about whether or not devices need to be switched off, please refer to the documentation supplied with the external device.

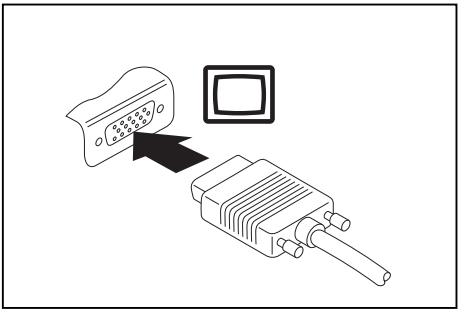
Some of the external devices require special drivers (see the operating system and external device documentation).

Connecting an external monitor

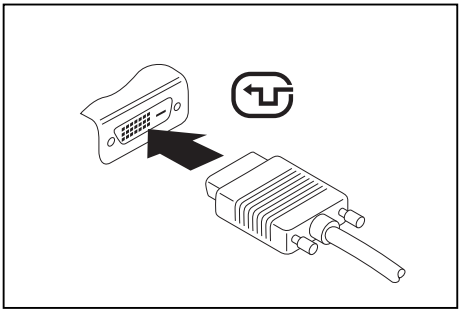
An analog monitor is connected to the analog external monitor port (VGA), a digital monitor to the Display Port or to the DVI-D monitor port on the optional port replicator. The display output is limited to a maximum of two monitors at any one time (see "Key combinations", Page 26, section "Toggle display output").



Digital Display Port (on notebook or on optional port replicator)



Analog external monitor port (VGA) (on notebook or on optional port replicator)



Digital DVI-D monitor port (on optional port replicator)

- ► Switch off the notebook and the external monitor.
- ► Plug the data cable of the external monitor into the monitor port.
- ► First switch on the external monitor and then the notebook.

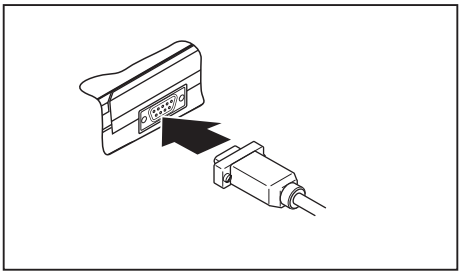
You can also switch back and forth between the external monitor and the LCD screen of the notebook, see chapter "Key combinations", Page 26.

You can display the same picture on the external monitor and the notebook LCD screen simultaneously.

If you wish to operate the screen via a DVI port, use the port replicator which is available as an option for your notebook.

Connecting external devices to the serial port (optional)

External devices (e.g. a printer or modem) can be connected to the optional serial port.



- ► Connect the data cable to the external device.
- ► Connect the appropriate data cable for the device to the serial port.

↳ For an exact description of how to connect external devices to the corresponding port, please refer to the documentation for the external device.

Port settings

i

You can change the port settings (e.g. address, interrupt) in the *BIOS Setup*.

Device drivers

i

Devices connected to the serial port require drivers. Your operating system already includes many drivers. If the required driver is missing then it will be necessary to install it. Up-to-date drivers are usually available on the Internet or will be supplied with the device on an optical disk.

Connecting USB devices

On the USB ports you can connect external devices that also have a USB port (e.g. a DVD drive, a printer, a scanner or a modem).

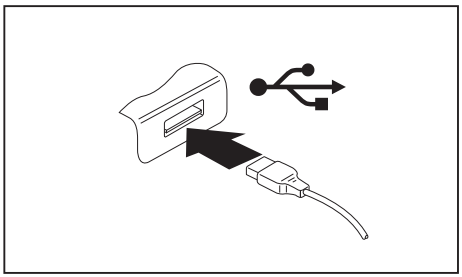
USB devices are hot-pluggable. This means you can connect and disconnect the cables of USB devices while the operating system is running.

USB 1.x has a maximum data transfer rate of 12 Mbps.

USB 2.0 has a data transfer rate of up to 480 Mbps.

USB 3.0 has a data transfer rate of up to 5 Gbps.

Additional information can be found in the documentation for the USB devices.



- ► Connect the data cable to the external device.
- ► Connect the data cable to a USB port of the notebook.

Device drivers

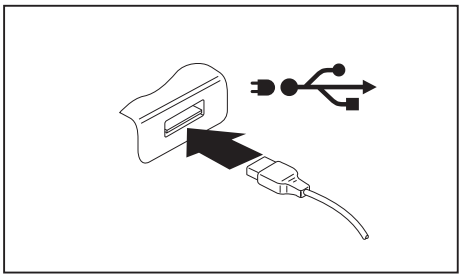
USB devices will be automatically recognized and installed by your operating system.

USB port with charging function (Anytime USB charge)

It is recommended that the notebook be operated with the AC adapter connected whenever the USB port with charging function is in use, as this function will drain the battery more quickly if an external USB device is being charged.

The AC adapter must already be connected when the notebook is switched off, as otherwise the USB charging function will be disabled and the connected USB devices will not be charged.

Some USB devices (e.g. mobile telephony) require a driver in order to utilize the USB charging function. In this case the USB charging function will not work when the notebook is switched off, as no drivers are active when the notebook is switched off.



You can use this USB port to charge or supply power to a USB device (e.g. to charge a PDA or a mobile phone or to connect a USB lamp), even if the notebook is switched off.

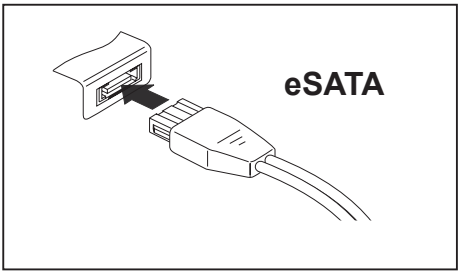
Connecting an external SATA hard drive (eSATA) (port replicator only)

The notebook itself does not have an eSATA port. The port replicator which is available as an option for your notebook offers you this type of port.

An external SATA hard disk can be connected at the eSATA port. This allows you to expand the internal hard disk capacity as you wish.

The length of the eSATA cable must not exceed 2 meters. Seek advice from a specialty store as to which eSATA data cable is suitable for your external eSATA hard disk. Note that the hard drive has its own external power supply available.

The data transfer rate is up to 2,400 Mbps.



- ► Connect the data cable to the external device.
- ► Connect the data cable to the eSATA port.

Device drivers

The eSATA hard disk is automatically recognized by your operating system and installed.

You will find more information in the documentation for the external SATA hard disk and the operating system.

Safe removal of eSATA and USB devices

Always correctly remove the device according to the rules described below, to ensure that none of your data is lost.

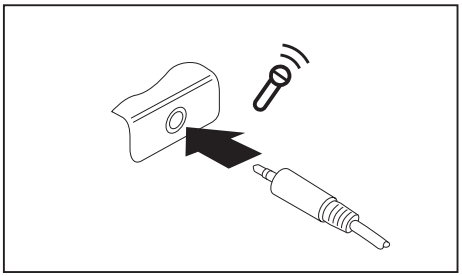
- ► Click on the symbol for safe removal of hardware with the left mouse button.
- ► Select the device you wish to shut down and remove.
- ► Press the "Enter" key.

↳ Wait for the dialog box which tells you that it is now safe to remove the device.

Connecting external audio devices

Microphone port/Line In

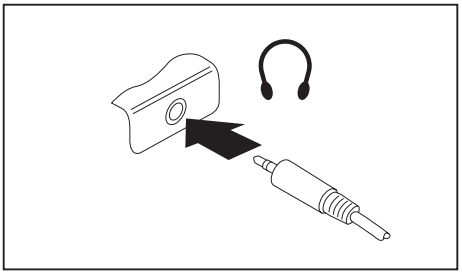
The microphone port/Line In allows you to connect an external microphone, a MiniDisc player, MP3 player, CD player or a tape deck to your notebook.



- ► Connect the audio cable to the external device.
- ► Connect the audio cable to the microphone port/Line In of the notebook.

Headphones port

You can connect headphones or external speakers to your notebook via the headphones port.



- ► Connect the audio cable to the external device.
- ► Connect the audio cable to the headphones port of the notebook.
- ↳ The internal speakers are disabled.

i

If you buy a cable from a retailer, please note the following information:

The headphones port on your notebook is a "3.5 mm jack".

If you want to connect headphones or speakers you will need a "3.5 mm jack plug".

Removing and installing components during servicing

Only qualified technicians should repair your notebook. Unauthorized opening or incorrect repair may greatly endanger the user (electric shock, fire risk) and will invalidate your warranty.

You may remove and install the components described in this chapter yourself after consulting the Hotline/Service Desk.

If you remove and install components without consulting the Hotline/Service Desk, then the warranty of your notebook will be voided.

Notes on installing and removing boards and components

- Switch off your notebook and remove the AC plug from the power outlet.
- Always remove the battery.
- Take care when you use the locking mechanisms for the battery and any other component.
- Never use sharp objects such as screwdrivers, scissors or knives as a lever to remove covers.

Boards with electrostatic sensitive devices (ESD) are marked with the label shown.

When handling boards fitted with ESDs, you must always observe the following points:

- You must always discharge static build up (e.g. by touching a grounded object) before working with boards.
- The equipment and tools you use must be free of static charge.
- Remove the AC plug from the power outlet before inserting or removing boards.
- Always hold boards by their edges.
- Never touch connector pins or conductors on the board.

Preparing to remove components

If you are going to remove or change system components, prepare for the removal as follows:

Please observe the safety information in chapter "Important notes", Page 13.

Remove the AC plug from the power outlet!

► Switch the device off.

The device must not be in energy saving mode.

► Close the LCD screen.
► Remove all the cables from the device.
► Turn the device over and place it on a stable, flat and clean surface. If necessary, lay an anti-slip cloth on this surface to prevent the device from being scratched.
► Remove the battery, see "Removing a rechargeable battery", Page 33.

Removing and installing memory expansion

If you are asked by the Hotline/Service Desk to remove or install a memory expansion module yourself, proceed as follows:

Please observe the safety information in chapter "Important notes", Page 13.

During installation/removal of memory modules, the battery must remain removed from the notebook and the notebook must not be connected to the AC adapter, see "Preparing to remove components", Page 62.

Only use memory modules that have been approved for use in your notebook (see chapter "Technical data", Page 78).

Never use force when installing or removing a memory module.

Make sure that no foreign objects fall into the memory upgrade compartment.

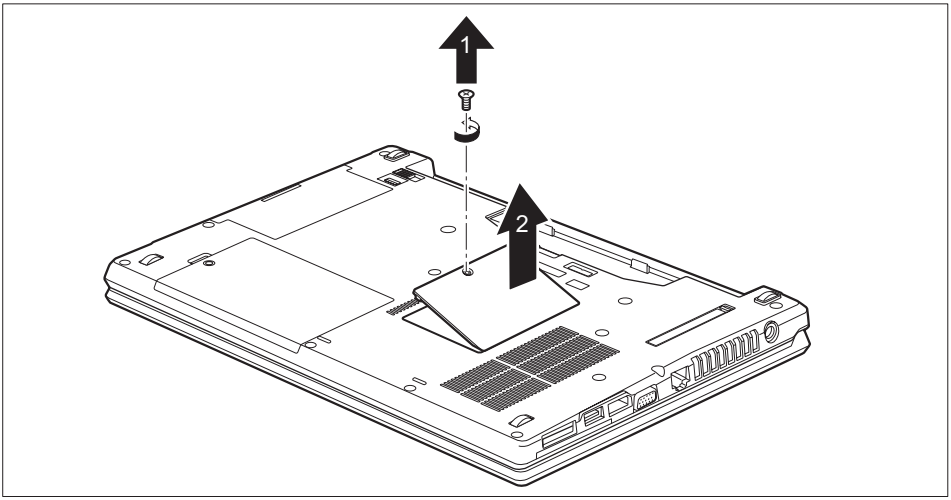
You must open the memory upgrade compartment to remove or install a memory module. On some devices, it is possible that opening the compartment exposes various components. Only authorized specialists are permitted to remove or change these components. Therefore, be sure to observe the following:

Individual components can become very hot during operation. Therefore, we recommend that you wait one hour after switching the notebook off before removing or installing memory modules. Otherwise, there is a risk of suffering burns!

As some components are exposed that are sensitive to static electricity, please take note of chapter "Notes on installing and removing boards and components", Page 61.

Removing the cover

► Prepare for removal, see "Preparing to remove components", Page 62.

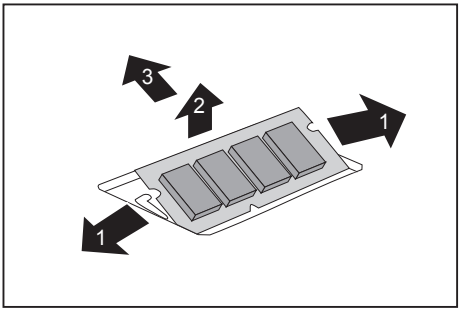


► Remove the screw (1).

Keep the screw in a safe place.

► Lift the cover off the notebook (2).

Removing a memory module

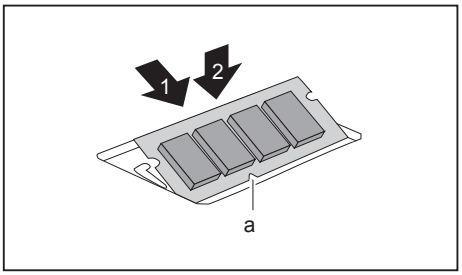


► Carefully push the two mounting clips outwards (1).

↳ The memory module will fold upwards (2).

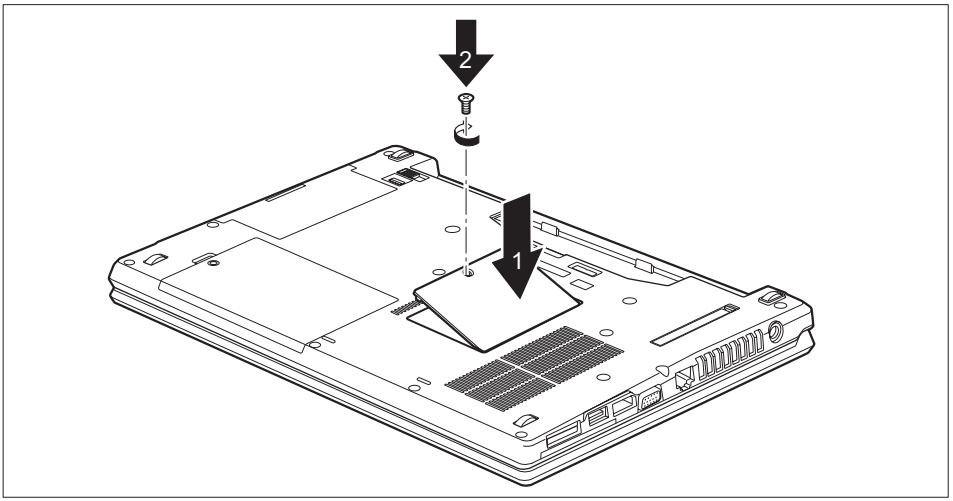
► Pull the memory module out of its slot in the direction of the arrow (3).

Installing a memory module



- ► Insert the memory module with the contacts and the recess (a) forward in the slot (1).
- ► Carefully push the memory module downwards until you feel it click into place (2).

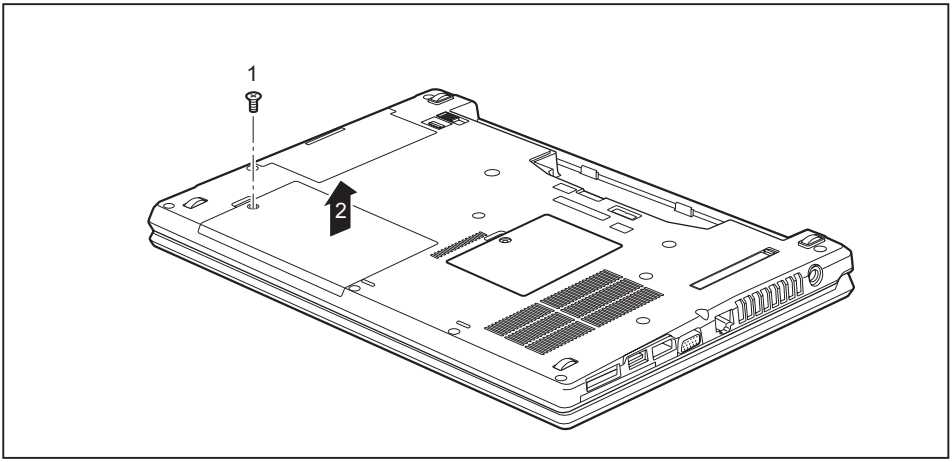
Attaching the cover



- ► Place the cover in the correct location (1).
- ► Tighten the screw (2).
- ► Complete the installation, see "Finishing component removal", Page 68.

Removing and installing the hard disk

Removing the cover



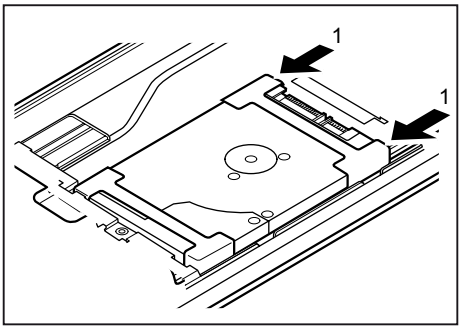
► Remove the screw (1).

Keep the screws in a safe place. If you are removing more than one component at the same time, store the screws for the individual components separate from each other. If you install the wrong screws, components may be damaged.

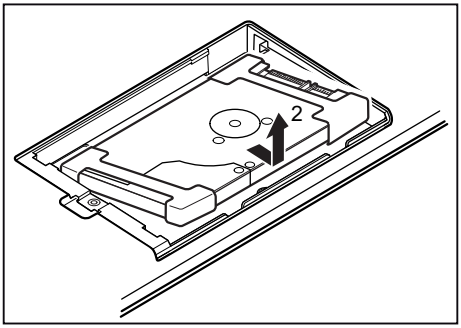
The screws are not all the same length and when the cover is installed, the correct screws must be used.

► Lift the cover off the notebook (2).

Removing the hard disk

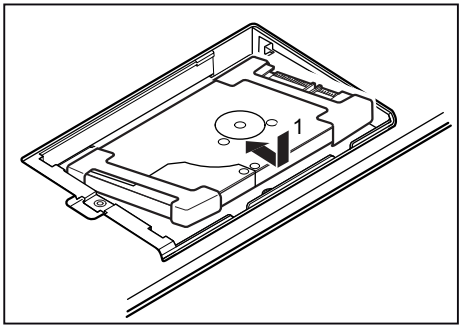


► To release the hard disk from the contacts, pull the hard disk in the direction of the arrow (1).

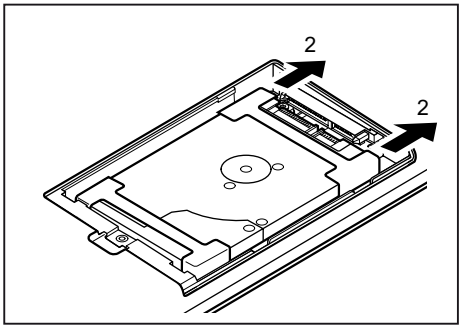


► Remove the hard disk from the hard disk access compartment (2).

Installing a hard disk

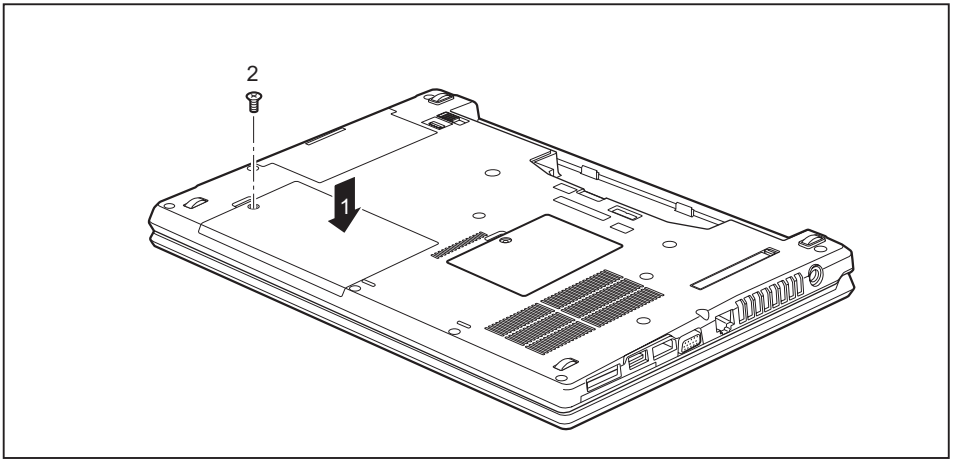


► Place the hard disk into the hard disk access compartment (1).



► Pull the hard disk in the direction of the arrow (2) until it engages in the contacts.

Attaching the cover



► Place the cover in the correct location (1).
► Tighten the screw (2).

Finishing component removal

After you have removed or changed the system components as required, please prepare your device for operation again as follows:

► Install the battery again, see "Installing a rechargeable battery", Page 34.
► Turn the notebook the right way up again and place it on a flat surface.
► Reconnect the cables that were previously disconnected.

Settings in BIOS Setup Utility

The *BIOS Setup Utility* allows you to set the system functions and the hardware configuration for the notebook.

When a notebook is delivered, the factory default settings are effective. You can change these settings in the menus of the *BIOS Setup Utility*. Any changes you make take effect as soon as you save and exit the *BIOS Setup Utility*.

The *BIOS Setup Utility* program contains the following menus:

About	Displays information relating to the BIOS, processor and notebook
System	Advanced system settings
Advanced	Configuration of various hardware components, such as mouse, keyboard, processor
Security	Password settings and security functions
Boot	Configuration of the start-up sequence
Exit	Exits the *BIOS Setup Utility*

Starting the BIOS Setup Utility

► Reboot the device (switch off/on or reboot the operating system).

↳ The following message (or similar) appears on the screen briefly at startup:

```
<F2> BIOS Setup <F12> Boot Menu
```

► Press the function key F2.

► If a password has been assigned, enter the password and press the Enter key.

If you have forgotten the password, contact your system administrator or contact our customer service center.

The *BIOS Setup Utility* starts.

BIOS Setup Utility operation

Press the F1 key to display help about operation of the *BIOS Setup Utility*. The description of the individual settings is shown in the right-hand window of the *BIOS Setup Utility*.

With the F9 key you can load the default settings of the *BIOS Setup Utility*.

► Use the cursor keys ← or → to select the menu you wish to access to make changes.

↳ The menu is displayed on the screen.

► Select the option you want to change with the cursor keys ↑ or ↓.

► Press the "Enter" key.

► Press the ESC key to exit the selected menu.

► For future reference, make a note of the changes you have made (for example, in this manual).

Exiting BIOS Setup Utility

You need to select the desired option in the *Exit* menu and activate it by pressing the Enter key:

Exit Saving Changes - save changes and exit BIOS Setup Utility

► To save the current menu settings and exit the *BIOS Setup Utility*, select *Exit Saving Changes* and *Yes*.

↳ The notebook is rebooted and the new settings come into effect.

Exit Discarding Changes - Reject changes and exit BIOS Setup Utility

► To discard the changes, select *Exit Discarding Changes* and *Yes*.

↳ The settings in place when *BIOS Setup Utility* was called remain effective. *BIOS Setup Utility* is terminated and the notebook is rebooted.

Load Setup Defaults – load default values

► To copy the standard entries for all menus of the *BIOS Setup Utility*, choose *Load Setup Defaults* and *Yes*.

Discard Changes - Discard Changes without exiting BIOS Setup Utility

► To discard the changes you have made, select *Discard Changes* and *Yes*.

↳ The settings in place when *BIOS Setup Utility* was called remain effective. You can now make additional settings in the *BIOS Setup Utility*.

► If you want to exit the *BIOS Setup Utility* with these settings, select *Exit Saving Changes* and *Yes*.

Save Changes - save changes without exiting the BIOS Setup Utility

► To save the changes, select *Save Changes* and *Yes*.

↳ The changes are saved. You can now make additional settings in the BIOS Setup Utility.

► If you want to exit BIOS Setup Utility with these settings, choose *Exit Saving Changes* and *Yes*.

Save changes and power off

► To save the changes and switch off your device, select *Save Changes and Power Off* and *Yes*.

↳ The changes are saved. Your device is shut down.

Troubleshooting and tips

If a fault occurs, try to correct it as described. If you fail to correct the problem, proceed as follows:

- ► Make a note of the steps and the circumstances that led to the fault. Also make a note of any error messages displayed.
- ► Switch the notebook off.
- ► Please contact the Hotline/Service Desk.

You can contact Fujitsu Service and Support in the following ways:

- Toll free phone: 1-800-Fujitsu (1-800-838-5487)
- Website: "http://solutions.us.fujitsu.com/www/content/support/contact/index.php"

Before you place the call, have the following information ready so that the customer support representative can provide you with the fastest possible solution:

- The model name and serial number of the notebook. The serial number is located on a sticker on the underside of the notebook.
- Notes with the messages that appeared on the screen and information on acoustic signals.
- Any changes you have made to the hardware or software since receiving the notebook.
- Any changes you have made to the *BIOS Setup* settings after receiving the notebook.
- Your system configuration and all peripheral devices connected to your system.
- Your sales contract.

Our notebooks have been designed primarily with mobile applications in mind. This means that considerable effort has been made to optimize components and equipment in terms of weight, space and energy requirements. Depending on the particular configuration you have purchased, it is possible that functionality may be slightly reduced compared to a desktop PC if you are running processor-intensive gaming software, e.g. games with intensive 3D graphics. Updating your hardware with drivers which have not been approved by Fujitsu may result in performance losses, data losses or malfunction of the equipment. A list of approved drivers and current BIOS versions can be downloaded from: "http://solutions.us.fujitsu.com"

Help if problems occur

Should you encounter a problem with your computer that you cannot resolve yourself:

- ► Note the ID number of your device. The ID number is found on the type rating plate on the back or underside of the casing.
- ► For further clarification of the problem, contact the Fujitsu Service Desk. When you do this, please have ready the ID number and serial number of your system.

Recovering your Factory Image

In the event you need to restore your original Factory Image, please refer to the appendix of this Operating Manual.

The notebook’s date or time is incorrect

Cause	Troubleshooting
Time and date are incorrect.	► With the *BIOS-Setup-Utility*, you can set the date and time in the *Main* menu.
Date and time are still set incorrectly after switching on the notebook.	► Please contact your sales outlet or our hotline/service desk.

When certain characters are entered on the keyboard, only numerals are written

Cause	Troubleshooting
The virtual number keys of your device are activated, see "Virtual number keys", Page 25	► Press the Num button.

The notebook’s LCD screen remains blank

Cause	Troubleshooting
Screen is switched off.	► Press a key or touch the touchpad.
External monitor or television set connected.	► Press the key combination for changing over the screen output, see "Key combinations", Page 26.

The LCD screen of the notebook is difficult to read

Cause	Troubleshooting
Reflected glare	► Turn the notebook or alter the tilt of the LCD screen. ► Increase the brightness of the screen.

The external monitor remains blank

Cause	Troubleshooting
Monitor is switched off.	► Switch the external monitor on.
Power saving has been activated (monitor is blank).	► Press any key to continue.
Brightness is set to dark.	► Adjust the brightness of the monitor.
Screen output is set to the notebook's LCD screen	► Press the key combination for changing over the screen output, see "Key combinations", Page 26.
The external monitor's AC cable or data cable is not connected properly.	► Switch off the external monitor and the notebook. ► Check whether the AC cable is plugged properly into the external monitor and into the power outlet. ► Check whether the data cable is properly connected to the notebook and the external monitor (if it is plugged in with a connector). ► Switch on the external monitor and the notebook.

The external monitor is blank or the image is unstable

Cause	Troubleshooting
The wrong external monitor has been selected or the wrong screen resolution has been set for the application program.	► Terminate the application program under Windows by pressing Alt + F4. If the error persists after terminating the program, use the key combination for switching the screen output (see "Key combinations", Page 26), in order to switch to the LCD screen of the notebook. Change the following setting: ► Set the screen resolution: Set the screen resolution as described in the documentation for your operating system. ► Select monitor: Select monitor 1 or 2 as described in the documentation for your operating system.

The notebook does not start after switching it on

Cause	Troubleshooting
The battery is not installed correctly.	► Check whether the battery is installed correctly in its compartment. ► Switch the notebook on.
The battery is dead.	► Charge the battery. **or** ► Insert a charged battery. **or** ► Connect the AC adapter to the notebook.
The AC adapter is not connected properly.	► Check whether the AC adapter is properly connected to the notebook. ► Switch the notebook on.

The notebook stops working

Cause	Troubleshooting
The notebook is in energy saving mode.	► End energy saving mode.
An application program has caused the malfunction.	► Close the application program or restart the notebook (by restarting the operating system or switching the device off and back on again).
The battery is dead.	► Charge the battery. **or** ► Insert a charged battery. **or** ► Connect the AC adapter to the notebook.

The printer does not print

Cause	Troubleshooting
The printer is not switched on.	► Make sure that the printer is switched on and ready for operation (refer to the documentation supplied with the printer).
The printer is not connected correctly.	► Check that the data cable connecting the notebook to the printer is properly connected.
The printer driver is faulty or not correctly installed, or it is the wrong printer driver.	► Check whether the correct printer driver is loaded (refer to the printer documentation).

The wireless connection to a network does not work

Cause	Troubleshooting
The wireless component is switched off.	► Switch the wireless component on (see "Switching the wireless components on and off", Page 42).
The wireless component is switched on. Despite this, the wireless connection to a network does not work.	► Check whether the wireless connection is enabled by the software. ► Further information on using the wireless component can be found in the help files.

Acoustic warning

Cause	Troubleshooting
A beep sounds every few seconds. The battery is almost dead.	► Charge the battery.

Smart Card reader is not recognized

Cause	Troubleshooting
Chip on Smart Card inserted incorrectly.	► Make sure you have inserted your Smart Card into the Smart Card reader with the chip facing upwards or downward (depending on device). ► Check whether the Smart Card you are using is supported. Your Smart Card must comply with the ISO standard 7816-1, -2, -3 and -4.

Smart Card PIN forgotten

Cause	Troubleshooting
PIN forgotten	► If you are working in a network, contact your system administrator, who can unlock your notebook with a Supervisor PIN.

Smart Card lost

Cause	Troubleshooting
Smart Card lost.	► If you are working in a network, contact your system administrator, who can boot your notebook with a Supervisor Smart Card.

Error messages on the screen

This section describes the error messages generated by the BIOS Setup. Error messages displayed by the operating system or programs are described in the documentation for these programs.

If the error message appears repeatedly despite troubleshooting measures, contact the place of purchase or our customer service center.

Error message/cause	Troubleshooting
CMOS Battery Bad If the error message occurs repeatedly, the back-up battery in the notebook is dead.	► Contact your sales outlet or our customer service center.
System CMOS checksum bad - Default configuration used The system configuration information is incorrect.	► Switch the notebook off. ► Switch the notebook on. ► Press the function key F2 to access the *BIOS Setup*. ► In the *BIOS Setup*, select the *Exit* menu. ► Select the entry *Load Setup Defaults*. ► Select *OK* and press the Enter key.
Extended memory failed at offset: xxxx Failing Bits: zzzz zzzz When testing the extended memory. an error has resulted at the address xxxx.	► Check whether the additional memory module has been inserted correctly.
Failure Fixed Disk n The settings of the hard disk drive are incorrect.	► Start the *BIOS Setup* (*Primary Master* submenu) and select the correct settings.
Keyboard controller error	► Switch the notebook off with the ON/OFF button. ► Wait 3 - 5 seconds and switch on the notebook again.
Keyboard error	If you use an external keyboard: ► Check the connection and reboot the notebook.
nn Stuck key	► Make sure that no key is pressed.
Operating system not found	► Check in the *BIOS Setup* whether your hard disk has been set correctly. ► Make sure that the operating system is installed on the corresponding drive.
Press <F1> to resume, <F2> to SETUP This error message appears if an error occurs during the self-test before starting the operating system.	► Press the F1 function key to start the operating system. ► Press the function key F2 to access the *BIOS Setup*.

Error message/cause	Troubleshooting
Previous boot incomplete - Default configuration used Default values have been set for certain settings because of an error which occurred in the previous system boot. Check the settings in the BIOS Setup.	► Press the F1 function key when prompted to do so.
Real time clock error	► Contact your sales outlet or our customer service center.
nnnnK Shadow RAM failed at offset: xxxx Failing Bits: zzzz	► Contact your sales outlet or our customer service center.
System battery is dead - Replace and run SETUP	► Contact your sales outlet or our customer service center.
System cache error - Cache disabled	► Contact your sales outlet or our customer service center.
System timer error	► Contact your sales outlet or our customer service center.

Technical data

LIFEBOOK

	LIFEBOOK E544	LIFEBOOK E554
Ambient conditions		
Operating temperature	41°F – 95°F / 5°C – 35°C	
Transport temperature	5°F – 140°F / -15°C – 60°C	
Dimensions		
Width x Depth x Height	13.31 inch x 9.09 inch x 0.95-1.24 inch / 338 mm x 231 mm x 25.1 - 31.4 mm	14.72 inch x 9.84 inch x 0.95-1.24 inch / 374 mm x 250 mm x 24.2 - 31.4 mm
Weight	approx. 4.19 lbs / approx. 1.9 kg	approx. 4.63 lbs / approx. 2.1 kg
Main memory		
Slots	2 slots 204-pin DDR3L-1600 SO-DIMM with a total of max. 16 GB RAM	
Approved memory modules	2 GB, 4 GB or 8 GB DDR3L-1600 SO-DIMM	

WLAN specifications

Type of network	x2 (SB) + BT (v4.0+HS) Intel WilkinsPead2(SB) 2x2 (11ac)+ BT (v4.0 + HS) Intel WilkinsPeak2(11ac) (*1)
Transfer rate	(Automatic switching) IEEE802.11 a and g: 54 Mbps max. data rate; IEEE802.11n: 300 Mbps max. data rate
Active frequency	• 802.11n: 2.4 GHz or 5 GHz • 802.11b/g: 2400~2473 MHz • 802.11a: 4900~5850 MHz
Typical operating distances	• 802.11a: 40 ft. (12 m) @ 54 Mbps; 300 ft. (91 m) @ 6 Mbps • 802.11b: 100 ft. (30 m) @ 11 Mbps; 300 ft. (91 m) @ 1 Mbps • 802.11g: 100 ft. (30 m) @ 54 Mbps; 300 ft. (91 m) @ 1 Mbps • 802.11n: Estimated: double the operating distance of 802.11g and 802.11a in their respective frequencies
Number of channels	• 802.11a: 8 independent channels • 802.11b/g: 11 channels, 3 non-overlapping channels • 802.11n: Channel bonding takes two of the non-overlapping 20MHz channels and combines them into one 40MHz channel. It is actually 12 non-overlapping channels with channel bonding and 24 without. Also it is 1 non-overlapping channel in 2.4GHz when channel bonding is used.
Security	Encryption types: WEP, TKIP, AES, WPA 1.0 and WPA 2.0 compliant Encryption key, lengths supported: 64 bits and 128 bits
Maximum recommended number of computers to be connected over wireless LAN (during ad hoc connection)	10 units or less

Rechargeable battery

For information on the batteries used in your device, please see "http://solutions.us.fujitsu.com/www/content/support/contact/index.php".

	Rechargeable battery 49 Wh	Rechargeable battery 63 Wh	Rechargeable battery 72 Wh
Rated voltage	10.8 V	10.8 V / 11.1 V	10.8 V / 11.25 V
Rated capacity	4500 mAh	5800 mAh / 5600 mAh	6700 mAh / 6400 mAh

AC adapter

Electrical data	
Primary	
Rated voltage	100 V – 240 V (automatic)
Rated frequency	50 Hz – 60 Hz (automatic)
Secondary	
Rated voltage	19 V
Max. rated current	3.42 A

An additional AC adapter or AC cable can be ordered at any time.

Manufacturer's notes

Disposal and recycling

You can find information on this subject on your notebook or on our website ("http://solutions.us.fujitsu.com/www/content/products/trade-in_program/").

Recycling your battery

Over time, the batteries that run your mobile computer will begin to hold a charge for a shorter amount of time; this is a natural occurrence for all batteries. When this occurs, you may want to replace the battery with a fresh one*. If you replace it, it is important that you dispose of the old battery properly because batteries contain materials that could cause environmental damage if disposed of improperly.

Fujitsu is very concerned with environmental protection, and has enlisted the services of the Rechargeable Battery Recycling Corporation (RBRC)**, a nonprofit public service organization dedicated to protecting our environment by recycling old batteries at no cost to you.

RBRC has drop-off points at tens of thousands of locations throughout the United States and Canada. To find the location nearest you, go to "www.RBRC.org" or call 1-800-822-8837.

If there are no convenient RBRC locations near you, you can also go to the EIA Consumer Education Initiative website "http://EIAE.org/ " and search for a convenient disposal location.

Remember – protecting the environment is a cooperative effort, and we must make every effort to protect it for current and future generations.

* To order a new battery for your Fujitsu mobile computer, go to the Fujitsu shopping site at "www.shopfujitsu.com" in the US or "www.fujitsu.ca/products/notebooks" in Canada.

** RBRC is an independent third party to which Fujitsu provides funding for battery recycling; RBRC is in no way affiliated with Fujitsu.

DOC (Industry CANADA) Notices

Radios and Television

This Class B digital apparatus meets all requirements of Canadian Interference-Causing Equipment Regulations.

CET appareil numérique de la class B respecte toutes les exigence du Réglement sur le matérial brouilleur du Canada.

UL Notice

IMPORTANT SAFETY INSTRUCTIONS

This unit requires an AC adapter to operate. Only use UL Listed I.T.E. adapters with an output rating of 19 VDC, with a minimum current of 3.42A (65W). The correct output rating is indicated on the AC adapter label. Refer to the illustration below for the correct AC Adapter output polarity:

When using your notebook equipment, basic safety precautions should always be followed to reduce the risk of fire, electric shock and injury to persons, including the following:

- Do not use this product near water for example, near a bathtub, washbowl, kitchen sink or laundry tub, in a wet basement or near a swimming pool.
- Use only the power cord and batteries indicated in this manual. Do not dispose of batteries in a fire. They may explode. Check with local codes for possible special disposal instructions.

SAVE THESE INSTRUCTIONS

For Authorized Repair Technicians Only

CAUTION:

For continued protection against risk of fire, replace only with the same type and rating fuse.

WARNING:

Danger of explosion if Lithium (CMOS) battery is incorrectly replaced. Replace only with the same or equivalent type recommended by the manufacturer.

Dispose of used batteries according to the manufacturer's instruction.

ENERGY STAR Compliance

Your Fujitsu system is an ENERGY STAR qualified mobile PC. By choosing a computer with the latest energy-saving technology, you're helping to preserve our environment for future generations. ENERGY STAR is a joint program of the U.S. Environmental Protection Agency, U.S. Department of Energy, Natural Resources Canada, and other governments around the world helping us save money while protecting the environment through energy efficient products and practices. With energy costs and global warming top-of-mind for consumers, Fujitsu is committed to offering solutions that help consumers conserve energy and improve the quality of our environment.

Sleep mode:

You will notice that your computer is initially set so that the display turns off after 15 minutes of user inactivity, and the computer goes into Sleep mode after 20 minutes of user inactivity. When going into Sleep mode, the computer also reduces the speed of any active Ethernet network links. To "wake" the computer from Sleep mode, press the Suspend/Resume Button.

Energy saving benefits:

Fujitsu ENERGY STAR qualified mobile PCs use about half as much electricity as standard equipment – saving half in utility costs. But more than that, ENERGY STAR also makes a difference for the environment. Did you know that the average house can be responsible for twice the greenhouse gas emissions as the average car? That's because every time you flip on a light switch, run your dishwasher, or turn on your PC, you use energy, which means more greenhouse gas emissions from power plants. So the more energy we can save through energy efficiency, the more we help to reduce greenhouse gases and the risks of global warming.

To learn more about the important ENERGY STAR program, visit:"www.energystar.gov".

To read about how Fujitsu is supporting Sustainable Management along with several other environmental activities, visit the Fujitsu Corporate Citizenship page at: "http://www.computers.us.fujitsu.com/www/content/aboutus/environmental/environment.php".

Declarations of conformity

This device complies with Part 15 of the FCC Rules. Operations are subject to the following two conditions: (1) This device may not cause harmful interference, (2) this device must accept any interference received, including interference that may cause undesired operation.

FCC and IC Regulatory Information

Please note the following regulatory information related to the wireless LAN device.

Regulatory Notes and Statements

Wireless LAN, Health and Authorization for use

Radio frequency electromagnetic energy is emitted from Wireless LAN devices. The energy levels of these emissions, however, are far much less than the electromagnetic energy emissions from wireless devices such as mobile phones. Wireless LAN devices are safe for use by consumers because they operate within the guidelines found in radio frequency safety standards and recommendations. The use of Wireless LAN devices may be restricted in some situations or environments, such as:

- On board an airplane, or
- In an explosive environment, or
- In situations where the interference risk to other devices or services is perceived or identified as harmful.

In cases in which the policy regarding use of Wireless LAN devices in specific environments is not clear (e.g., airports, hospitals, chemical/oil/gas industrial plants, private buildings), obtain authorization to use these devices prior to operating the equipment.

Regulatory Information/Disclaimers

Installation and use of this Wireless LAN device must be in strict accordance with the instructions included in the user documentation provided with the product. Any changes or modifications made to this device that are not expressly approved by the manufacturer may void the user's authority to operate the equipment. The manufacturer is not responsible for any radio or television interference caused by unauthorized modification of this device, or the substitution or attachment of connecting cables and equipment other than those specified by the manufacturer. It is the responsibility of the user to correct any interference caused by such unauthorized modification, substitution or attachment. The manufacturer and its authorized resellers or distributors will assume no liability for any damage or violation of government regulations arising from failure to comply with these guidelines.

This device must not be co-located or operated in conjunction with any other antenna or transmitter.

For IEEE 802.11a Wireless LAN: For operation within 5.15~5.25 GHz frequency range, it is restricted to indoor environments, and the antenna of this device must be integral.

Federal Communications Commission and Industry Canada statement:

This device complies with Part 15 of FCC Rules and Industry Canada license exempt RSS standard(s).

Operation is subject to the following two conditions: (1) This device may not cause interference, and, (2) This device must accept any interference, including interference that may cause undesired operation of this device.

Déclaration d'Industrie Canada

Cet appareil est conforme à la Section 15 des Règles de la FC C et à la (aux) norme(s) RSS concernant les appareils exempt s de licence par Industrie Canada. Son fonctionnement est soumis aux deux condition s suivantes : (1) cet appareil ne doit pas causer d'interférence nuisib le; (2) cet appareil doit accepter toutes les interférences reçues, y compris celles pouvan t causer un mauvais fonctionnement de l'appareil.

FCC Interference Statement

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy. If not installed and used in accordance with the instructions, it may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation.

If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try and correct the interference by one or more of the following measures:

1. Reorient or relocate the receiving antenna.
2. Increase the distance between the equipment and the receiver.
3. Connect the equipment to an outlet on a circuit different from the one the receiver is connected to.
4. Consult the dealer or an experienced radio/TV technician for help.

FCC Radio Frequency Exposure statement

The available scientific evidence does not show that any health problems are associated with using low power wireless devices. There is no proof, however, that these low power wireless devices are absolutely safe. Low power wireless devices emit low levels of radio frequency energy (RF) in the microwave range while being used. Whereas high levels of RF can produce health effects (by heating tissue), exposure to low-level RF that does not produce heating effects causes no known adverse health effects. Many studies of low-level RF exposure have not found any biological effects. Some studies have suggested that some biological effects might occur, but such findings have not been confirmed by additional research.

The wireless LAN radio device has been tested and found to comply with FCC radiation exposure limits set forth for an uncontrolled equipment and meets the FCC radio frequency (RF) Exposure Guidelines in Supplement C to OET65.

The exposure standard for wireless devices employs a unit of measurement known as the Specific Absorption Rate, or SAR. The SAR limit set by the FCC is 1.6W/kg, and 1.6W/kg by Industry Canada.

This device is compliant with SAR for general population /uncontrolled exposure limits in ANSI/IEEE C95.1-1992 and Canada RSS 102, and had been tested in accordance with the measurement methods and procedures specified in OET Bulletin 65 Supplement C, and Canada RSS 102. This device has been tested, and meets the FCC, IC RF exposure guidelines when tested with the device operating conditions.

Déclaration de la FCC/d'Industrie Canada sur l'exposition aux radiofréquences

La norme régissant l'exposition des appareils sans fil aux radiofréquences emploie une unité de mesure dénommée Taux d'absorption spécifique, ou TAS. La FCC et Industrie Canada ont défini la même limite de TAS : 1,6 W/kg. Cet appareil est conforme au TAS pour les limites d'exposition générales de la population/non contrôlées définies par les règles C95.1-1992 de l'ANSI/IEEE et RSS 102 d'Industrie Canada ; il a été testé en conformité avec les méthodes et procédures de mesure spécifiées dans le supplément C du bulletin 65 de l'OET (Office d'ingénierie et de technologie) et la règle RSS 102 d'Industrie Canada. Cet appareil a été testé selon les directives de la FCC et d'IC concernant l'exposition aux radiofréquences et s'est révélé conforme à ces dernières lorsqu'il a été testé en contact direct avec le corps.

Export restrictions

This product or software contains encryption code which may not be exported or transferred from the US or Canada without an approved US Department of Commerce export license. This device complies with Part 15 of FCC Rules., as well as ICES 003 B / NMB 003 B. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesirable operation. Modifications not expressly authorized by Fujitsu America, Inc. may invalidate the user's right to operate this equipment.

Canadian Notice

The device for the 5150 - 5250 MHz band is only for indoor usage to reduce the potential for harmful interference to co-channel mobile satellite systems.

The maximum antenna gain of 6 dBi permitted (for devices in the 5250 - 5350 MHz, 5470 - 5725 MHz and 5725 - 5825 MHz bands) to comply with the e.i.r.p. limit as stated in A9.2 of RSS210.

In addition, users are cautioned to take note that high power radars are allocated as primary users (meaning they have priority) of 5250 - 5350 MHz and 5650 - 5850 MHz and these radars could cause interference and/or damage to LE-LAN devices.

Avis pour le Canada

Le matériel destiné à un usage sur la bande 5 150 - 5 250 MHz doit être utilisé uniquement à l'intérieur afin de réduire les risques de brouillage nuisible causé aux systèmes mobiles par satellite fonctionnant sur un même canal.

Un gain d'antenne de 6 dBi est autorisé (pour le matériel utilisant les bandes 5 250 - 5 350 MHz, 5 470 - 5 725 MHz et 5 725 - 5 825 MHz), conformément à la limite p.i.r.e. maximale permise selon l'annexe A9.2 afférent aux périphériques RSS210.

En outre, les utilisateurs doivent prendre garde au fait que les radars de grande puissance sont considérés comme des utilisateurs principaux (ce qui signifie qu'ils sont prioritaires) des bandes 5 250 - 5 350 MHz et 5 650 - 5 850 MHz et qu'ils pourraient causer des interférences et/ou des dommages aux appareils de réseau exempts de licence.

Appendix

Before Using the Optional Wireless LAN

This manual describes the procedures required to properly set up and configure the optional integrated Wireless LAN Mini-PCI device (referred to as "WLAN device" in the rest of the manual). Before using the WLAN device, read this manual carefully to ensure its correct operation. Keep this manual in a safe place for future reference.

Wireless LAN Devices Covered by this Document

This document is applicable to systems containing the following device:

- Intel Wireless-N 7260 802.11 BGN + BT v4.0 or
- Intel Dual Band Wireless AC 7260 + BT v4.0

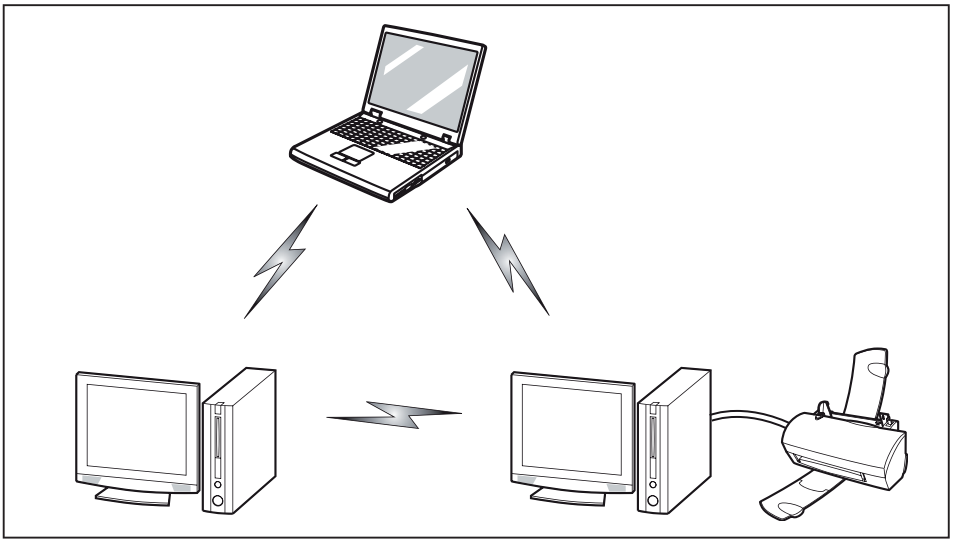
Characteristics of the WLAN Device

- The WLAN devices are PCI Express Mini cards attached to the main board of the mobile computer.
- The WLAN devices operate in license-free RF bands, eliminating the need to procure an FCC operating license. The WLAN operates in the 2.4GHz Industrial, Scientific, and Medical (ISM) RF band and the lower, middle, and upper bands of the 5GHz Unlicensed National Information Infrastructure (UNII) bands.
- The WLAN devices are capable of four operating modes, IEEE802.11a, IEEE802.11b, IEEE802.11g, and IEEE802.11n.
- The WLAN device is Wi-Fi certified and operates (as applicable) at the maximum data rate of 450 Mbps in IEEE802.11n mode (300 Mbps in this configuration); 54 Mbps in IEEE802.11g mode; and 11 Mbps in IEEE802.11b mode.
- The WLAN devices support the following encryption methods - WEP, TKIP, CKIP, and AES encryption.
- The Wireless LAN devices are compliant with the following standards: WPA, WPA2, CCX1.0, CCX2.0, CCX3.0, and CCX4.0.

Wireless LAN Modes Using this Device

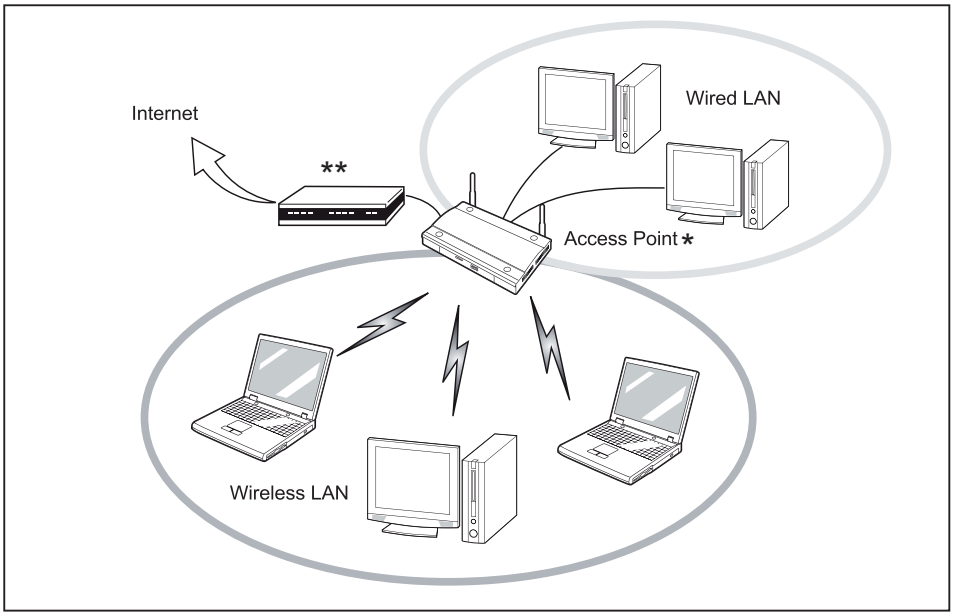
Ad Hoc Mode

"Ad Hoc Mode" refers to a wireless network architecture where wireless network connectivity between multiple computers is established without a central wireless network device, typically known as Access Point(s). Connectivity is accomplished using only client devices in a peer-to-peer fashion. That is why Ad Hoc networks are also known as peer-to-peer networks. Ad Hoc networks are an easy and inexpensive method for establishing network connectivity between multiple computers. Ad Hoc mode requires that the SSID, network authentication, and encryption key settings are identically configured on all computers in the Ad Hoc network.



Access Point (Infrastructure) Mode

Infrastructure mode refers to a wireless network architecture in which devices communicate with wireless or wired network devices by communicating through an Access Point. In infrastructure mode, wireless devices can communicate with each other or with a wired network. Corporate wireless networks operate in infrastructure mode because they require access to the WLAN in order to access services, devices, and computers (e.g., file servers, printers, databases).



* = An optional hub for a wired LAN may be required depending upon the type of access point used.

** = ADSL modem, cable modem, or similar

How to Handle This Device

The WLAN device is an optional device that may come pre-installed in your mobile computer. Under normal circumstances, it should not be necessary for you to remove or re-install it. The Operating System that your mobile computer comes with has been pre-configured to support the WLAN device.

- Integrated Intel Centrino wireless LAN devices support IEEE802.11a, IEEE802.11b, IEEE802.11g, and IEEE802.11n.
- The WLAN device operates in the 2.4 GHz ISM band and the 5 GHz lower, middle, and upper UNII bands.
- Microwave ovens may interfere with the operation of WLAN devices since they operate in the same 2.4 GHz frequency range as IEEE802.11b/g/n devices. Interference by microwaves does not occur with IEEE802.11a radio which operates in the 5 GHz RF band.
- Wireless devices that transmit in the 2.4 GHz range may interfere with operation of WLAN devices in IEEE802.11b/g/n modes. Symptoms of interference include reduced throughput, intermittent disconnects, and many frame errors. It is HIGHLY recommended that these interfering devices be powered off to ensure proper operation of the WLAN device.

Deactivating/Disconnecting the WLAN Device

Disconnecting the WLAN device may be desired in certain circumstances (to extend battery life) or where certain environments require it (i.e. hospitals, clinics, airplanes, etc.). The WLAN device can be disconnected in Windows using the WLAN icon in the system tray (Note that disconnecting via the icon in the system tray does not turn off the radio; it continues to transmit and receive even though it's not connected.)

► Press the ((ᵞ)) button to start the *WirelessSelector*.

↳ The wireless component indicator will go off when the wireless components are switched off.

Configuring the Wireless LAN

The optional WLAN device can be configured to establish wireless network connectivity using the software that is built into Windows. Support for most industry standard security solutions is contained in this software.

Pre-defined parameters will be required for this procedure. Please consult with your network administrator for these parameters:

Configuring the WLAN Using Windows

The WLAN device can be configured to establish wireless network connectivity using the software that is built into Windows Vista. Support for most industry standard security solutions is contained in this software.

Pre-defined parameters are required for this procedure. Consult your network administrator for these parameters:

1. From the *Modern Start* screen, press Windows + X, then select *Control Panel* from the menu.
2. If the *Control Panel* is not in *Classic View*, select *Classic View* from the left panel. Double-click the *Network and Sharing Center* icon.
3. Select *Setup a new connection or network*.
4. Depending upon what type of connection you would like to make, make a selection. For an infrastructure network, select *Manually connect to a wireless network*.
5. Enter the required information. It may be necessary to consult with your network administrator for some of the information.
6. In the event you require assistance, go to the *Network and Sharing Center* window (*Control Panel > Network and Sharing Center*), and type in relevant keywords in the *Search* box.

Connection to the network

After you have configured your computer, you can connect to an active network by performing the following steps:

1. Click on the *WLAN* icon in the system tray.
2. Select *Connect to a network*.
3. Select a network from the list that appears, and click the *Connect* button.

Troubleshooting the WLAN

Causes and countermeasures for troubles you may encounter while using your wireless LAN are described in the following table.

Problem	Possible Cause	Possible Solution
Unavailable network connection	Incorrect network name (SSID) or network key	**Ad hoc connection:** verify that the network names (SSID's) and network keys (WEP) of all computers to be connected have been configured correctly. SSID's and WEP key values must be identical on each machine. **Access Point (Infrastructure) connection:** set the network name (SSID) and network key to the same values as those of the access point. Set the Network Authentication value identically to that of the Access Point. Please consult your network administrator for this value, if necessary.
	Weak received signal strength and/or link quality	**Ad hoc connection:** Retry connection after shortening the distance to the destination computer or removing any obstacles for better sight. **Access Point (Infrastructure) connection:** Retry connection after shortening the distance to the access point or removing any obstacles for better sight.

Problem	Possible Cause	Possible Solution
Unavailable network connection (continued)	The WLAN device was deactivated or is disabled	Check if the wireless switch is turned On. Go to *Start > Control Panel*, and doubleclick on *Windows Mobility Center*. If the wireless network is off, click the *Turn wireless on* button.
	The computer to be connected is turned off	Check if the computer to be connected is turned ON.
	Incorrectly configured network settings	Recheck the configuration of your network settings.
	RF interference from Access Points or other wireless networks	The use of identical or overlapping RF channels can cause interference with the operation of the WLAN device. Change the channel of your Access Point to a channel that does not overlap with the interfering device.
	Wireless network authentication has failed	Re-check your Network Authentication, Encryption, and Security settings. Incorrectly configured security settings such as an incorrectly typed WEP key, a mis-configured LEAP username, or an incorrectly chosen authentication method will cause the LAN device to associate but not authenticate to the wireless network.
	Incorrect IP address configuration	This only applies to networks using static IP addresses. Please contact your network administrator for the correct settings.

Using the Bluetooth Device

Bluetooth is integrated into the Wireless LAN module. The Bluetooth capabilities are Bluetooth Basic, EDR and Bluetooth Low Energy (BT v4.0) operational modes.

What is Bluetooth?

Bluetooth technology is designed as a short-range wireless link between mobile devices, such as laptop computers, phones, printers, and cameras. Bluetooth technology is used to create Personal Area Networks (PANs) between devices in short-range of each other.

Proceed as follows to individually enable or disable wireless LAN or Bluetooth devices:

1. Switch on the WLAN/Bluetooth using the button.
2. In the screen *Modern Start*, select the option *Charms* > *Settings* > *Change PC Settings* > *Wireless*.
3. Under *Wireless* > *Wireless Devices*, click on the switch *Bluetooth* to switch on Bluetooth.

Where to Find Information About Bluetooth

For additional information about Bluetooth Technology, visit the Bluetooth Web site at: "www.bluetooth.com".

FCC Radiation Exposure Statement

This system complies with the FCC limit values for radio frequency radiation in an uncontrolled environment. The Bluetooth antenna is located at the top edge of the LCD screen and is exempt from the criteria for minimum distance because of its low power consumption.

The transmitter used in this system must not be operated together with other antennas or transmitters.

Canadian Notice

To prevent radio interference to licensed services, this system is designed for use in indoor spaces / in buildings and not directly at window openings, to allow a maximum shielding.

Warranty

Users are not authorized to modify this product. Any modifications invalidate the warranty.

This equipment may not be modified, altered, or changed in any way without signed written permission from Fujitsu. Unauthorized modification will void the equipment authorization from the FCC and Industry Canada and the warranty.

Image Backup and Recovery Procedures

Thank you for purchasing a Fujitsu computer. Fujitsu is committed to bringing you the best computing experience with your new system.

It is very important that you create DVD copies of your Recovery Image and Bootable Disk before beginning to use your system. To do so, follow the instructions in the “Creating a Backup of Bootable Disk and Recovery Image” section of this document.

It is also important that you create a copy of the software that is essential for your system to access the internet (hereafter called “essential access software”) to external writable media or an external drive. To do so, follow the instructions in the “Creating a Backup of the System-Specific Software Drivers”.

Creating a Backup of Bootable Disk and Recovery Image

When you purchased your new system, a copy of the recovery image was loaded into a hidden partition on your hard disk drive. Having a copy of the recovery image available to you means that in the event of system failure, you will be able to restore it and re-install the essential access software using Fujitsu Software Auto Installer.

To make a copy of the recovery image to DVD disks, you will need three or four blank disks to create the copy. After creating the copy, be sure to label the disks and keep them in a safe place to ensure they do not get damaged.

Note: If your system does not have an internal writable DVD drive, connect your system to an external drive* before beginning the following steps.

1. Launch *System Restore and Recovery* from the desktop icon. It will allow you to create the Bootable Disk and the Recovery Image Disk Set.
2. On “Step 1: Select the Bootable Disk from the list”:
   a. Select a media type.
   b. Notice the number of disks that are needed for the set.
   c. Click *Next* to proceed.
3. On “Step 2: Confirm your Recovery Disk”, click *Next*.
4. On “Step 3:” follow the on-screen instructions to make the disk or disk set, then click *Start*. It takes approximately 20 minutes to make one disk.
5. On “Step 4”, when the disk creation is completed, a message appears. Click *Finish* to exit the program.
6. Repeat Step 1: Select *Recovery Disk* from the list and repeat the above steps 2(a), 2(b), 2(c), 3, 4 and 5.

* DEPENDING UPON YOUR OPTICAL DRIVE AND MEDIA FORMAT USED, SOME MEDIA TYPES MAY BE INCOMPATIBLE FOR CREATING IMAGE BACKUPS.

Creating a Backup of Essential Access Software

When you purchased your new system, a “Fujitsu Software Extractor” shortcut was loaded to “C:\Fujitsu\Drivers\AutoInstaller\”. This shortcut allows you to save the software driver packages along with the extracted Auto Installer software package to a selected location. It is recommended that you save these packages to writable media or an external drive. This ensures that in the event of system failure you will be able to re-install the essential access software.

1. Open the C:\Fujitsu\Drivers\AutoInstaller\ folder
2. Run “Fujitsu Software Extractor” as an Administrator
   a. Right-click on Fujitsu Software Extractor.
   b. Select the “Run as Administrator” option from the menu that is displayed.
3. The default save location is C:\Fujitsu\ AutoInstaller\ Drivers\. You can change the location by clicking on the *Browse* button and selecting your preferred location.
   Note: It is recommended that you change the default location and save the software packages to the external writable media or drive.
4. Click on the *Save Packages* button.
5. Fujitsu Software Extractor copies the zipped software packages and Readme files, and extracts the Auto Installer folder to the selected location.

Note: The extracted Auto Installer will later be used to install the software automatically on the system in the event of generic image restoration when the software is not pre-installed in the image.

RECOVER YOUR SYSTEM WHEN THE HARD DRIVE IS STILL ACCESSIBLE

Using the Recovery and Utility Tools

The Recovery and Utility tools consist of a variety of tools that will help you recover your recovery image and system images, and delete the data from your hard disk.

Methods for accessing the utilities

Recovery and Utility Tools are preinstalled in a hidden partition by the factory, or they can be accessed by using the bootable disk.

Note: The Recovery and Utility tools may be deleted from your hard disk drive if you modify the partitions. If that occurs, you will not be able to use the hidden partition for booting to Recovery and Utility Tools, but you will still be able to boot from the Bootable Disk.

Determining whether Recovery and Utility is pre-loaded

1. Turn on or reboot your system. When the Fujitsu logo appears, press the F12 key.
2. Use the Tab key to get to the Application Menu.
3. Check whether the Recovery and Utility option is present. If it is not present, it means that the utility must be used from the Bootable Disk. Proceed to “Running Recovery and Utility from the Bootable Disk” if Recovery and Utility is unavailable.

Running Recovery and Utility from hard disk

1. Turn on or reboot your system. When the Fujitsu logo appears, press the F12 key.
2. Use the Tab key to get to the Application Menu.
3. Cursor down to *Recovery and Utility* and press the Enter key.
4. Choose your language, if necessary. Select *Recovery and Utility* to proceed.
5. Three tool options appear: *Diagnostics*, *Recovery*, and *Utility* (refer to the Recovery and Utility tools section below for instructions on how to use these tools).
6. If this was successful please skip the next step and go to “Recovery and Utility tools.”
7. If this was NOT successful, please go to the next step.

Running Recovery and Utility from the Bootable disk

To verify/change the boot-up priority (rather than booting-up from the hard drive or an external media drive), perform the following steps:

1. Power on your system. When the Fujitsu logo appears on the screen, press the F12 key.
2. Insert the bootable disk into the drive tray.
3. Highlight the CD/DVD option from the Boot menu, then press Enter.
4. Click *OK*.
5. Select CD/DVD boot mode: UEFI Mode, if applicable, and then press Enter . While the files are being loaded from the disk, the Fujitsu logo screen will appear followed by a progress bar at the bottom of the screen.

Recovery and Utility tools

Note: Recovery and Utility tools may not be available on your system depending on the region from which the system was shipped.

Diagnostics tool: The Diagnostics tool is designed for use by IT professionals. It is not likely you will need to use this tool. If you should need to use this tool, perform the following steps:

1. Press the *Diagnostics Tool* button to start the Diagnostics tool.
2. Read the note, and then click *OK*.
3. Choose one or more of the following options for diagnostics on the Fujitsu Hardware Diagnostics Tool window: CPU, Memory, Display, Hard Disk, CD/DVD/BD, Floppy Disk, Keyboard, and Mouse.
4. Click the *Option* button in the Tool menu to specify how many times the tool should run diagnostics on each selected component.
5. Press *Execute* to start the Diagnostics tool.
6. After the execution is completed, the selected components are circled in red to indicate that they have been diagnosed and the result dialog window opens. Click *Close* to close the window.
7. Click *End* to close the Diagnostics tool, and then click *Yes* to confirm the end of diagnostics session.

Recovery tool: The Recovery tool contains two options:

- Restore C Drive: Restore recovery image (only C: drive)
- Restore Full Hard Drive: Restore recovery image (full hard drive).

You can use these tools to restore the Recovery Image from the hidden partition, and perform a full hard drive recovery. Please refer to instructions above for details on how to create a Recovery Image.

Restore the Recovery Image from Hidden Partition

1. Click [Restore C: drive] from Recovery and Utility tools
2. The progress bar is followed by “Restore Recovery image (only C: drive)” screen confirming that the Image will be restored to the C: drive. Click *Next*.
3. Read the instruction screen and select *Agree*, then click *Next*.
4. Click *OK* to acknowledge the warning message to restore recovery image to the C: drive.
5. When the progress bar appears, wait for the process to complete.
6. Click *Finish* when the process completes; the computer will restart to Windows.
7. Follow the steps listed in the “Auto Installation support for software packages from hidden partition” section.
8. Download FSDM (Fujitsu Software Download Manager) from the support site and download all the software applicable to the model and OS using FSDM.
9. Follow the steps listed in “Auto Installation support for software packages downloaded from support website” section.

RECOVER YOUR SYSTEM WHEN THE HARD DRIVE IS NOT BOOTABLE

Restore the Recovery Image for Full Hard Drive

Follow the steps in the “Recovering your Recovery Image using Recovery and Utility (for new hard drive or non-bootable hard drive)” section. You will need the Bootable Disk and the Recovery Disk Set for this task.

Utility tool: If applicable for your region, the Utility tool contains two options: Hard Disk Data Delete and Partition Creation.

The Hard Disk Data Delete utility is used to delete all data on the hard disk and prevent the data from being reused.

NOTE: Do not use the Hard Disk Data Delete utility unless you are absolutely certain that you want to erase your entire hard disk, including all partitions.

To delete hard disk data:

1. Click the *Hard Disk Data Delete* button. The progress bar appears, followed by the EULA screen.
2. Agree to the EULA and click *Next*.
3. Choose the hard disk from which the data should be deleted in the list of hard disks and click *Next*.

The Partition Creation utility is used to change the C: and D: drive partition sizes.

To run this utility: (This is not an option when using Windows 7.)

1. Click the *Partition Creation* button.
2. A progress bar appears, followed by the EULA screen. Agree to the EULA.
3. On the *Recovery Tool - Partition Creation* screen, move the slider to set disk size, and then click *OK*.
4. Click *Yes* in the *Partition Creation* confirmation dialog.

WARNING: It is highly recommended that you send your product to Fujitsu Service to replace a hard drive. A mistake could possibly destroy your computer, your new hard drive or both.

Recovering Your Recovery Image Using Recovery and Utility (for new hard drive or non-bootable hard drive)

If you have installed a new hard drive or your hard drive is not bootable, perform the following steps.

Note: You will need the Bootable disk and Recovery Image disk set for this recovery.

1. Power on your system. When the Fujitsu logo appears on the screen, press the Enter key.
2. Insert the bootable disk in your DVD drive, then click *OK*.
3. Highlight the CD/DVD option from the Boot Menu and press Enter.
4. Select CD/DVD boot mode: Select UEFI Mode, if applicable and press Enter. While the files are being loaded from the disk, the Fujitsu logo screen appears followed by a progress bar at the bottom of the screen.
5. Choose your language, if necessary.
6. Three tool options appear: *Diagnostics*, *Recovery* and *Utility*. Select *Recovery*.
   - For Windows 8.1: Select *Restore full hard drive*
   - For Windows 7: Select *Restoring the Factory Image (full hard drive recovery)*
7. Click *Next* to confirm full hard drive restoration. All data on HDD will be deleted.
8. Agree to EULA by selecting *Agree* option and clicking *Next*.
9. Click *Next* on the Recovery Disk Check screen to verify that the bootable disk has been inserted into the optical drive.
10. The *Checking for Recovery Dis*k screen appears followed by the prompt to insert the first disk. Click *OK* to continue. Repeat this step for all disks. After all recovery disks have been checked and the check has been completed, click *Next*.
11. Follow the prompt to reinsert the first recovery disk and click *Next*.
12. Click *OK* when you receive the final warning informing you that all data on drive C will be lost. This starts the recovery process.
13. Follow the prompts to insert the next recovery disks and click *OK*.
14. After the copying of the image to the HDD completes the restore process is complete, click *Finish* to restart the system. The computer will restart automatically and then go through the first boot process.
15. Follow the steps listed in “Auto Installation support for essential access software from backup location” section.
16. Download FSDM (Fujitsu Software Download Manager) from support site and download all the software applicable to the model and OS using FSDM.
17. Follow the steps listed in “Auto Installation support for essential access software downloaded from support website.

Installing the Software after the Recovery Image is Restored

Auto-installation support for essential access software from hidden partition

The below listed steps are applicable only in cases in which the recovery image restore and hidden partition contents have not been wiped out.

1. After the recovery image is restored, launch the desktop icon “Fujitsu Software Auto Installer”.
2. Double-click on “Fujitsu Software Auto Installer” desktop icon.
3. Click *Yes* on User Account Control Dialog box. This will take some time to process the software packages. A message will be displayed during this time, “Please wait while the content is being processed”.
4. If EULA is displayed for Fujitsu Software Auto Installer, accept the EULA, otherwise continue.
5. Then Fujitsu Software Auto Installer user interface will be launched providing ability to auto-install the essential access software on the system.
6. It is recommended that you install all the software in the listed order. You can *Select All*, to install the software in the order listed.
7. Click *Install* to start the installation.
8. After installing all the selected drivers, Installation Results window will be displayed. Click *OK*.
9. “You must restart the system for the settings to take effect. Do you wish to reboot now?” message appears. Select *Yes*.
10. The system will now reboot.
11. You can now connect to the internet and download FSDM (Fujitsu Software Download Manager) from the support site and download all the software applicable to the model and OS using FSDM if they are not downloaded yet.

Auto-installation support for essential access software from backup location

The below listed steps are applicable in cases in which a backup copy was created as mentioned in the section “Creating a Backup of essential access software”.

1. It is important to have the extracted Auto installer software package folder and Readme file in the same location as other software folders. Otherwise auto-installation of the software will not be supported.
2. Inside the Auto Installer software package, launch FjAutoinstall.exe as an Administrator.
3. Click *Yes* on the User Account Control dialog box. This will take some time to process the software packages. A message will be displayed during this time stating, “Please wait while the content is being processed”.
4. If EULA is displayed for Fujitsu Software Auto Installer, accept the EULA, otherwise continue.
5. The Fujitsu Software Auto Installer user interface will be launched providing ability to auto install the essential access software on the system.
6. It is recommended that you install all the software in the listed order. You can “Select All”, to install the software in the order listed.
7. Click the *Install* button to start the installation.
8. After installing all the selected drivers, *Installation Results* window is be displayed. Click *OK*.
9. “You must restart the system for the settings to take effect. Do you wish to reboot now?” message appears. Select *Yes*.
10. The system will now reboot.

Auto Installation support for the software downloaded from support website

1. Download FSDM (Fujitsu Software Download Manager) from the support site and download all the drivers applicable to the model and OS using FSDM if they are not downloaded yet.
2. When the software packages are downloaded from web, it is important to download the Auto Installer Software package and the model/language- specific Readme file if you prefer to auto install the software.
3. It is important to have the extracted Auto Installer software package folder and Readme file in the same location as other software folders. Otherwise auto-installation of the software will not be supported.
4. Inside the Auto Installer software package, launch FjAutoinstall.exe as administrator.
5. Click *Yes* on the User Account Control dialog box. This will take some time to process the software packages. A message will be displayed during this time stating “Please wait while the content is being processed”.
6. If EULA is displayed for Fujitsu Software Auto Installer, accept the EULA, otherwise continue.
7. The Fujitsu Software Auto Installer user interface will be launched providing the ability to auto install the software downloaded from support site.
8. It is recommended that you install all the software in the listed order. You can *Select All*, to install the software in the order listed.
9. Click the *Install* button to start the installation.
10. After installing all the selected drivers, the Installation Results window is displayed. Click *OK*.
11. “You must restart the system for the settings to take effect. Do you wish to reboot now?” message appears. Select *Yes*.
12. The system will now reboot.

Downloading Driver Updates

To ensure that you always have the most current driver updates related to your system, you should occasionally access the Fujitsu Software Download Manager (FSDM) utility. The FSDM utility is available from the Fujitsu Support site. FSDM will allow you to view and download a list of the most current drivers, utilities, and applications to determine whether you have the latest versions. To download the FSDM Utility, go to the Support Site: "http://support.fujitsupc.com/CS/Portal/support.do?srch=DOWNLOADS".

If you are planning on downgrading, upgrading or changing versions of your operating system during this process please see the User's Guide for more information at "http://solutions.us.fujitsu.com".

Index

A
A beep sounds every second 72
AC adapter
connecting 18
Set up 18
Acoustic warnings 75
Alt+Tab 27
Anti-theft protection 49
Application keys 28
Audio connections 60

B
Back tab 27
Backspace 24
Backspace key 24
Battery 32
battery charge 40
Caring for and maintaining 32
charge level 32
Charging 32
see Rechargeable battery 32
Self-discharge 32
Service life 32
Storing 32
battery charge meter 32
Battery indicator 21
Battery status indicator
see Battery indicator 21
Battery symbol
see Battery indicator 21
BIOS Setup Utility
, protecting with password 50
calling 69
exiting 70
operation 69
Settings 69
Blank LCD screen 72
Bluetooth
switching module off 90
switching module on 90
Bluetooth, Safety notes 14
Boards 61
Bonus Apps 19
Brightness of the screen
Decrease 27
Increase 27

C
Caps Lock 24
Indicator 21
Caps Lock key 24
CD/DVD
Manual emergency removal 38
CD/DVD indicator 37
Charge capacity, battery 32
Charging back-up battery 72
Choose a location 18
Cleaning 16
Components
Installing/Removing 61
Configuration, BIOS Setup Utility 69
Configuring hardware 69
Configuring system 69
Connecting audio devices 60
Connecting headphones 60
Connecting microphone 60
Crystal View screen
cleaning 16
Ctrl+Alt+Del 27
Cursor control 24
Cursor keys 24

D
Date not correct 72
Declarations of conformity 83
Device drivers
serial port 56
Devices,
connecting 56
DOC (INDUSTRY CANADA) NOTICES 81
Drive
Removing 35
Drive indicator
Indicator 21

E
Emergency removal of optical disk 38
Ending
energy saving mode 74
Energy
Energy consumption 40
Energy saving 14
Energy saving functions 40
Enter 24
Enter key 24
Error messages on the screen 76
Errors
Acoustic warnings 75
Screen messages 76
ESD 61

Ethernet LAN 43
External devices,
connecting 56

F
Fault
Elimination 71
Fingerprint sensor 48
configuring 48
First-time setup 17
Fn key 24
Fn+F10 27
Fn+F3 26
Fn+F4 26
Fn+F6 27
Fn+F7 27
Fn+F8 27
Fn+F9 27

G
Getting started 17

I
Important notes 13
In case of service 61
Incorrect time 72
Indicator
Caps Lock 21
Drive 21
Num Lock 21
Scroll Lock 21
Information,
safety 13
Instructions
Boards 61
Cleaning 16

K
Kensington Lock Cable 49
Key combinations 26
Keyboard 23
cleaning 16
keys 23

L
LCD screen
cleaning 16
Decrease brightness 27
difficult to read 72
Notes 30
reflected glare 72
Remains blank 72
Line feed 24

M
Main memory
see memory expansion 62
Making ready to use 18
Manual removal of optical disk 38
Mechanical security 49
Memory card
handling 41
inserting 41
removing 41
Memory expansion
installing 64
removing 63
Memory module
Important notes 62
installing 64
removing 63
Memory removal
see memory expansion 62
Microphone 42
Mobile operation 14
Modular bay 35
Modular bay device
Removing 35
Modular bay devices 35
Monitor
connecting 55
no image 73
remains blank 73
unstable image 73
Monitor port
see VGA socket 55

N
Notebook
before traveling 15
cleaning 16
does not start 74
not working 74
operating 20
switching off 22
transporting 14, 16
Notes 13
disposal / recycling 81
Energy saving 14
LCD screen 30
Transport 14

Num Lock
indicator 25–26
Indicator 21
Number keypad 23
Numeric keypad 23
see Separate number keypad 26
see Virtual number keys 25

O
Operating system
activating system protection 51
cancel system protection 51
Protecting with password 51
Operation, notebook 20
Optical disk
Inserting 37
Removing 37
Optical disks
Handling 36
Optical drive 36

P
Packaging 17
Password
changing 50
entering 50
removing 51
Password protection 49
Port replicator
Connecting a notebook 45
Ports 44
Ports
Port replicator 44
Power saving 14
Power-on indicator 21
Printer does not print 74
Problem solving 71

R
Rechargeable battery
see battery 32
Return 24

S
Safety information 13
Scroll Lock
Indicator 21
Security functions 48
Smart Card 53
SystemLock 53
Self-discharge, battery 32
Separate number keypad 26
serial port
connecting devices 56
Serial port
Settings 56
Serial port, 56
Service life, battery 32
Set up
Device 18
Setup
see BIOS Setup Utility 69
Shift 24
Shift key 24
Shift+Tab 27
Slot
Memory cards 41
Speaker 42
switch off 26
switch on 26
Standby indicator 21
Status indicators 20
Subwoofer 42
Summer time 72
Supervisor password
change 50
entering 50
removing 51
Switching between display outputs 27
Switching on
the notebook 22
Switching on for the first time 19
System expansion 62
see memory expansion 62
System settings, BIOS Setup Utility 69

T
Tab key 24
Technical data 78
AC adapter 80
notebook 78
The wireless connection to a network
does not work 75
Time not correct 72
Tips 71
Touchpad 26, 29
buttons 29
cleaning 16
dragging items 30
executing commands 29
Move pointer 29
selecting an item 29
switch off 26
Touchpad buttons 26

TPM 52
Transport 14, 16
Damage during transportation 17
Traveling, notebook 15
Troubleshooting 71
Trusted Platform Module 52

U
USB charging function 58
USB ports 57
User password
change 50
entering 50
removing 51
Using the security lock 49

V
VGA socket 55
Virtual number keys 25
Volume
increase 27
reduce 27
Volume control 42

W
Webcam 31
Weight saver
Removing 35
Windows key 24
Winter time 72
wireless components
Safety notes 14
Wireless LAN
Safety notes 14
switching module off 90
switching module on 90
Wrong date/time 72